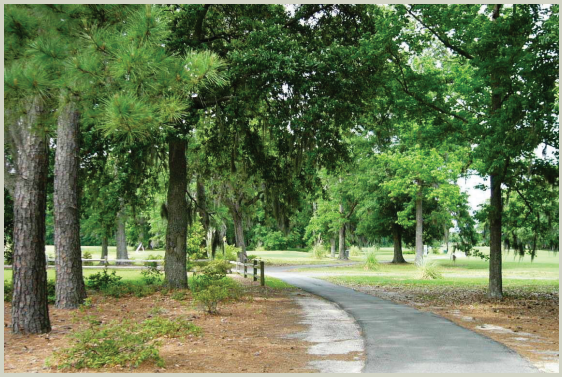
Installation Design Guide

March 2007



Hunter AAF, Georgia

Installation Design Guide

March 2007

HUNTER AAF, GEORGIA

Prepared for:
Savannah District, US Army Corps of Engineers

Prepared by:
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Contract Number W912HN-06-D-0004

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USERS GUIDE

The Installation Design Guide (IDG) is a hyperlinked document. A hyperlink is specially formatted text that contains an address (in the document, within another document, or on the internet) that when "followed" or "clicked on" takes the reader to that link. Hyperlinks are underlined and shown in the color blue. Hyperlinks within the IDG link to other documents, reference tables, appendices, graphics and maps, and the Internet for further reference or in-depth study on a particular issue.

The Table of Contents is hyperlinked to the sections, subsections and appendices. At the end of each section and appendix there is a box like the one at the bottom of this page. The box contains two hyperlinks; one to return to the Table of Contents and the other to go on to the next section or appendix.

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SECTION 1
INTRODUCTION

1.1 PURPOSE

1.1.1 This Installation Design Guide (IDG or "Guide") provides guidance on standardizing the visual effects for the exterior of new and renovated facilities as well as the surrounding land. The guide provides measures on improving the total environmental and visual quality of the installation (Fig. 1.1). It also includes provisions for maintenance and repair requirements on the installation. Improvements to the quality of development and the use of sustainable design and development practices have a direct impact on the efficiency and effectiveness of the installation. These measures affect mission performance and the quality of life for those who live and work on or visit Hunter Army Airfield (AAF).

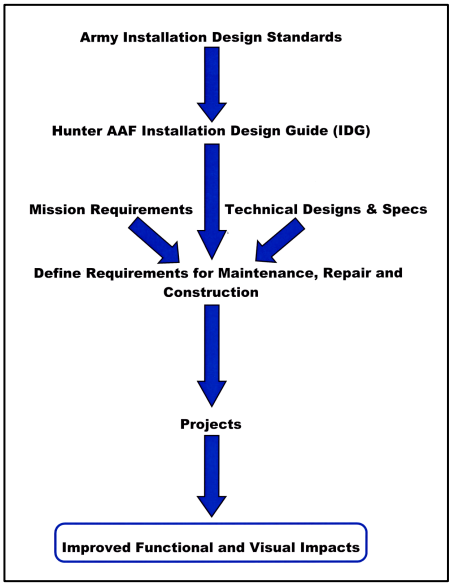

Fig. 1.1 - The Hunter AAF IDG is a tool to implement Army standards.

1.1.2 The Hunter AAF staff is committed to fully integrating relevant management and environmental considerations into installation design practice so that operations and services are efficiently and effectively performed, and so that sustainable environmental policies are upheld.

1.1.3 This IDG includes standards and general guidelines for site planning; architectural character, colors and materials; vehicular and pedestrian circulation; and landscape elements, including plant material, outdoor seating, signage, lighting and utilities. The design guidelines incorporate sustainable design, quality of design, antiterrorism, low maintenance, life cycle costing, historical and cultural considerations, durability, safety and compatibility.

1.1.4 The goal of this IDG is to provide guidance and to establish requirements for all installation personnel involved in design, construction, maintenance or renovation and to develop, implement and sustain the Hunter AAF infrastructure in order to meet current and future mission needs.

1.2 OBJECTIVES

1.2.1 The objectives of the Hunter AAF IDG are:

- To provide guidance and establish minimum requirements for formulating the specific and unique design criteria that Hunter AAF will use in new construction, renovation, maintenance and repair projects. The design criteria include design principles for architecture landscape architecture and site planning. Environmental requirements, energy conservation, sustainable design, traffic safety and life-cycle maintenance cost approaches are defined as well.
- To provide design standards that define color, materials, style, proportion, signage and other aspects of design for all visual elements. These guidelines ensure design unity and harmony and reinforce unique visual character and site conditions.
- To provide instructions for implementation of the design guidelines and selection of materials for new construction, renovation, maintenance and repair projects, as appropriate.
- To provide direction for accomplishing sustainable development. Sustainable development includes conservation of materials and energy; cost effective life cycle maintenance; recycling, waste reduction and reuse of materials; and other actions and innovations that result in preservation of manpower, materials and environmental resources. See Appendix D.
- To provide guidance to integrate antiterrorism standards.

1.3 STAKEHOLDERS

1.3.1 This IDG is to be used by all individuals involved in the decision making process for design, construction, renovation, maintenance and repair of facilities:

Fig. 1.2 - A diagram of the Guide's stakeholders.

1.3.2 The primary stakeholders and users include the following (Fig. 2.1):

- Installation Commander and staff
- Garrison Commander and staff
- U.S. Army Corps of Engineers, Savannah District
- Customers and other users of installation infrastructure
- Consulting planners, architects, engineers, and landscape architects (working on installation projects)
- Maintenance personnel
- Contractors employed by the Operations and Maintenance Division

1.3.3 The ultimate success of the IDG depends on the commitment of all stakeholders to fully implement the guide and on the proper education of installation staff about the existence and purpose of the guide.

1.4 ORGANIZATION

This IDG is organized to facilitate the preparation and execution of projects to improve the visual image of the installation and to ensure that design conforms to Army standards, including sustainability requirements.

- Section 2 "The Installation Design Guide Process and Implementation" describes how the IDG plays a part when initiating any maintenance, repair, renovation or new construction project and how to use the IDG as a resource.
- Section 3 "Design Guide Analysis Criteria" discusses specific goals and objectives promoted by the Hunter AAF IDG, the visual elements that are addressed by the IDG and the design principles employed in analyzing the current and desired state of the Hunter AAF installation.
- Section 4 "Installation Profile" details the regional setting, natural environment and existing land use on Hunter AAF.
- Section 5, "Visual Themes and Zones" analyzes the design theme of Hunter AAF by breaking it down into a set of visual zones. Assets, liabilities and recommendations are described for each zone.
- Section 6 "Improvement Projects" provides a consolidated list of recommendations to correct the visual and functional liabilities identified for each visual zone.
- Section 7 "Site Planning Design Standards" discusses what factors and requirements should be considered in selecting and plannng a building site.
- Section 8 "Buildings Design Standards" discusses what factors and requirements should be considered in building design.
- Section 9 "Circulation Design Standards" discusses what factors and requirements should be considered in the design of roads, parking lots and the pedestrian circulation system.
- Section 10 "Landscape Design Standards" discusses what factors and requirements should be considered in landscape design.
- Section 11 "Site Elements Design Standards" discusses what factors and requirements should be considered in the selection and location of site elements.
- Section 12 "Antiterrorism Design Standards" discusses what factors and requirements should be considered for all infrastructures that may affect antiterrorism efforts.

1.5 WHEN TO USE THE HUNTER AAF GUIDE

The Guide must be used for any project that will modify Hunter AAF buildings, landscape or infrastructure unless the project proponent has acquired a waiver from the Directorate of Public Works (DPW). This requirement applies to all building and landscape construction, renovation, rehabilitation and maintenance projects. All projects, regardless of the funding source, are subject to this requirement, including self-help projects.

This IDG provides design guidance and establishes requirements for all aspects of Hunter AAF infrastructure. The document also contains general design concepts and Army installation standards. Use this IDG in determining the design and construction considerations inherent in the preparation of project plans. The IDG provides design guidelines and Army installation standards intended to be used in all maintenance, renovation and new construction projects. In particular, this document should be used as a reference for requirements in the design of facilities including buildings, new roads, road widening, parking, sidewalks, bicycle paths, access control points (ACP), site furnishing selection and placement, signage selection and placement, lighting selection and placement, utility corridor selection, utility structures, landscaping and the preservation of vegetation.

1.6 MAINTAINING THE HUNTER AAF GUIDE

1.6.1 Since the Guide is a "living document", it will be kept up-to-date and accurate to ensure its continued usefulness. It will be revised as mission, budget, guidance and other conditions generate new planning and design requirements, and in response to facility user feedback.

1.6.2 In accordance with AR 210-20, *Real Property Master Planning for Army Installations*, the Real Property Planning Board (RPPB) is the adjudicating body for the Hunter AAF IDG at the installation level. Violations and variances from standards will be reviewed and adjudicated by the RPPB. The Installation Commander chairs the RPPB.

1.7 RESPONSIBILITIES

As directed by the Secretary of the Army and the Chief of Staff, Army and approved by the Army Installation Management Board of Directors, the following responsibilities are established:

1.7.1 Assistant Chief of Staff for Installation Management (ACSIM):

- Establish Army facility standards and approve deviations from the standards.
- Approve Army Installation Design Standards Implementation Plan.
- Approve Army Installation Design Standards Investment Strategy.

1.7.2 Commander, Installation Management Command (IMCOM):

- Develop and implement the Army Installation Design Standards Implementation Plan.
- Develop and implement the Army Installation Design Standards Investment Strategy.
- Ensure compliance with the Army Installation Design Standards.
- Maintain electronic newsletter for communicating changes in standards.

1.7.3 Installation Commander and Staff:

- Chair RPPB to review and approve projects established by the Executive Steering Committee (ESC) and the Military Construction Army (MCA) program.

1.7.4 Garrison Commander and Staff:

- Maintain and provide IDG compliance for Hunter AAF.
- Submit MCA project requests to the IMCOM Southeast Region Office for approval and funding. After review and approval by the Garrison Commander, submit projects according to instructions provided by IMCOM.
- Approve outcomes of Planning and Design Charrettes. See ACSIM memorandum, DAIM-ZA, "Planning Charrettes for Military Construction, Army (MCA) Projects" dated 30 April 03. See also ACSIM Memorandum, DAIM-FD, "Conducting a Planning Charrette for Military Construction, Army (MCA) Projects" dated 2 Apr 03.

- The DPW supports the Garrison Commander and Staff by performing the following tasks;
  - Developing the IDG.
  - Defining and communicating the responsibilities of other organizations in implementing the IDG.
  - Ensuring that the processes needed for IDG implementation are established, implemented and maintained.
  - Conducting Planning and Design Charrettes in accordance with the DIAM memoranda identified in Section 1.7.4.

1.7.5 **U.S. Army Corps of Engineers, Savannah District:**

- Provide planning, design and construction support to Hunter AAF.

1.7.6 **Consulting Planners, Architects, Engineers and Landscape Architects:**

- Use the IDG for planning and design to make Army standard designs conform to the Hunter AAF master plan for exterior appearance called "Southern Living Station of Choice."

Fig. 1.3 - Efficient water usage contributes to a high performance facility.

Fig. 1.4 - Energy efficient lighting contributes to sustainability.

Fig. 1.5 - CO2 monitoring measures indoor air quality to assist in creating a healthy environment.

1.8 SUSTAINABLE DESIGN AND DEVELOPMENT

1.8.1 Practicing the principles of sustainable design in the planning, design, construction and operation of infrastructure and facilities is a smart business practice. Protecting our natural resources and reducing our impact on the natural environment is achievable when we create high-performance (Fig. 1.3), energy efficient (Fig. 1.4), healthy (Fig. 1.5) and safe buildings.

1.8.2 The Integrated Design Process. Critical to the success of sustainable design and development is the organization and commitment of design teams to engage in the Integrated Design Process. To effect change in building design and operation, the project delivery process itself is a collaborative effort to integrate design strategies among all disciplines and all players in the project delivery process. Integrated design demands a more inclusive team during planning and design to ensure that all relevant experience and knowledge are applied to the project. Future building users and facility managers must be invited to join architects, engineers and planners in developing the vision and goals for new facilities.

1.8.3 Appendix D, Sustainable Design, discusses the sustainable design concept and its application to Army projects. Paragraph D.3 discusses the "Leadership in Energy and Environmental Design" (LEED) Green Building Rating System developed by the U.S. Green Building Council. To comply with the Assistant Chief of Staff for Installation Management (ACSIM) endorsement of Sustainable Design and Development initiatives, the LEED Rating System will be used for all projects funded FY08 and later. Because the planning and design process for projects anticipated for funding in FY08 is initiated many months in advance of funding, Hunter AAF has adopted use of the LEED Rating System.

As stated on the Green Building Council website, the LEED Green Building Rating System (a trademarked system) is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.

1.8.4 Further information on sustainable design can be obtained at the following websites:

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website This site provides information on the following topics: documentation and references; sustainable process, tools, products and materials; Sustainable Design and Development Training; and links to various sustainable design and development informational website.
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website.
- The Whole Building Design Guide (WBDG) website provides comprehensive and current information on sustainable design strategies and technologies.
- The U.S. Green Building Council (www.usgbc.org) developed the LEED Rating System and provides current information on sustainability for design and construction.

1.9 ARMY STANDARDS

Army Standards and References are included in the last two paragraphs of the following sections and appendices:

- Section 7 "Site Planning Design Standards"
- Section 8 "Buildings Design Standards"
- Section 9 "Circulation Design Standards"
- Section 10 "Landscape Design Standards"
- Section 11 "Site Element Design Standards"
- Section 12 "Antiterrorism Design Standards"
- Appendix D "Sustainable Design"
- Appendix M "Historic Preservation Guidelines"

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SECTION 2
THE INSTALLATION DESIGN GUIDE PROCESS AND IMPLEMENTATION

2.1 INTRODUCTION

Military installations are hometowns for many of our military families, resources for many veterans and retirees and an integral part of the surrounding communities. The Hunter AAF IDG provides direction for achieving a sense of community, order, tradition and pride on and off the installation. This section provides a brief overview of the IDG developmental process and methodology detailed in Unified Facilities Criteria (UFC) 2-600-01, Installation Design.

2.2 THE DESIGN GUIDE PROCESS

2.2.1 The IDG includes a process for analysis, planning, design and implementation. This process includes the following steps:

- **Setting Goals and Objectives.** The installation develops a set of goals and objectives that address the visual requirements of the installation. The goals and objectives provide a pre-determined image that helps create a visually pleasing and optimally functional environment (Fig. 2.1). See Section 3 "Design Guide Analysis Criteria" for Hunter AAF goals and objectives.
- **Conduct Visual and Spatial Surveys.** Two visual surveys were performed in the preparation of the IDG. The first survey established the visual zones and themes of Hunter AAF. The second survey documented the assets and liabilities within each visual zone. Chapter 5 of UFC 2-600-01 details the method for conducting the installation visual survey.

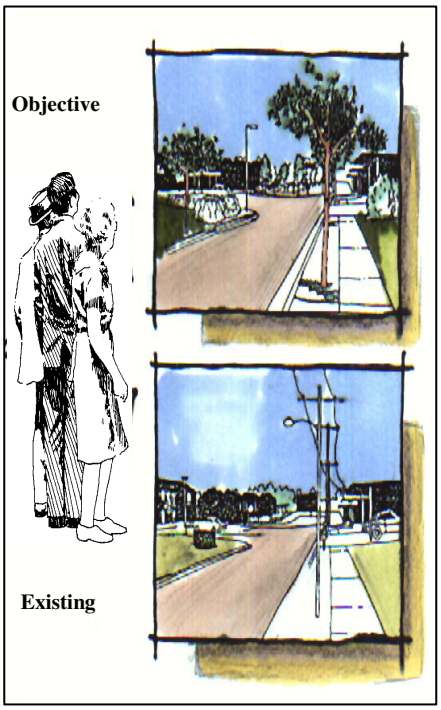

Fig. 2.1 – A goal is to include positive visual elements to enhance the appearance of the installation.

- **Visual Zones** - The information gathered during the first survey is used to establish the visual zones of the installation. The visual zones are delineated by the visual characteristics of an area defined as the "look and feel" of an area together with the dominant features that help define its image. A functional analysis of each zone organizes the visual impressions and assesses their functional relationships to determine the visual character and unifying motif. Visual features include the main entrance, primary and secondary roads, focal points and landmarks, significant architecture and good views.
- **Themes** - Visual zones with similar characteristics are then grouped together to form broader categories called themes.

- **Determine Assets and Liabilities.** During the second survey, a visual zone inventory is conducted. Each visual zone is analyzed for specific visual impacts. The objective of the inventory is to define the visual assets and liabilities within the visual zone. The assets and liabilities are listed in Section 5 "Visual Themes and Zones".
  - **Assets.** Assets are positive visual elements, design elements or features that enhance the surroundings, either visually or functionally.
  - **Liabilities.** Liabilities are negative visual elements, design elements or features that detract from the visual image or functionality of the surroundings. Liabilities should be corrected through appropriate design measures and are the basis for the recommendations listed for each visual zone.
- **Recommendations and Implementation Plan.** The assessment of each visual zone includes recommendations to correct liabilities and, where desired, to enhance assets.

2.2.2 The following six design components, described in sections 7 through 12, provide guidelines and standards from which to conduct the visual zone review and analysis:

- Section 7, Site Planning Design Standards
- Section 8, Buildings Design Standards
- Section 9, Circulation Design Standards
- Section 10, Landscape Design Standards
- Section 11, Site Elements Design Standards
- Section 12, Antiterrorism Design Standards

2.2.3 The visual inventory and analysis requires an understanding of basic design principles. These design principles are discussed in Section 3.4.

2.2.4 The basic design principles are used to define the visual elements described in Section 3.5. The assessment and classification of visual elements follows basic design principles describing "most preferred" (positive visuals elements) and "least preferred" (negative visual elements) design.

2.3 USING THE IDG

2.3.1 Use this IDG in determining the general design and construction considerations inherent in the preparation of project plans at Hunter AAF. The IDG provides Hunter AAF design guidelines and references to Army-wide design standards, both of which are to be used in all maintenance, repair, renovation and new construction projects. The IDG applies to all projects, regardless of the funding source.

2.3.2 The following steps illustrate how the design guide is used for the preparation of plans for new construction, renovation, maintenance and repair projects on the installation (Fig. 2.2):

Step 1: Review the Installation Profile information in Section 4.

Step 2: Review the IDG analysis criteria information in Section 3 including design goals and objectives, visual elements and design principles.

Step 3: Review the applicable references, guidelines and standards of the design components. These include site planning, buildings, circulation, landscaping, site elements and antiterrorism. These components are discussed in Sections 7 through 12 respectively.

Step 4: Review the information and description of the visual themes and zones in Sections 5.2 and 5.3.

Step 5: Select the zone where the project will be located from Section 5.3 Visual Zones. Review the assets, liabilities and recommendations for that zone.

Step 6: Select the appropriate guidelines or standards from the design components addressed in Sections 7 through 12.

Step 7: Assemble all materials gathered in steps 1 through 6 above.

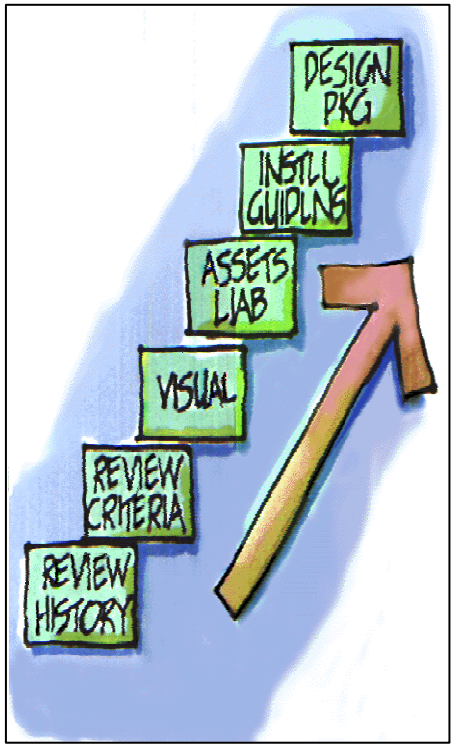

Fig. 2.2 – Steps in using the IDG.

2.4 IMPLEMENTATION

2.4.1 IDG Review and Approval.

The Hunter AAF IDG is reviewed periodically by the DPW Master Planning Division (Master Planning). Suggestions for changes to the IDG that have been received from units, tenants, other directorates, the Corps of Engineers and other parties are evaluated and considered. If additional information is needed to support a suggestion, the party making the suggestion is contacted. Prospective changes are drafted and reviewed by the Director of Public Works. When the prospective changes are in final form they are presented to the Garrison Commander for consideration and adoption. Adopted changes are incorporated into the IDG by Master Planning and all parties are notified by memorandum.

2.4.2 Compliance.

- For the IDG to work optimally it is essential that Master Planning establish an understanding of the IDG among the parties concerned with its use. This can best be established at the RPPB level where all installation principles are represented. Master Planning will insure that the guidelines and requirements of the IDG are readily available to, and understood by, all parties involved in the design of new facilities, design of additions or alterations to existing facilities, or maintenance.
- The Master Planner or designee, acting in support of the RPPB, is the first level reviewer of projects (Sustainability, Restoration and Modernization; Military Construction, Army; and Non-Appropriated Fund to include Design Build) and other requests for actions that involve compliance with IDG guidelines and standards.
- The Garrison Commander, supported and advised by the RPPB, is the final authority in enforcement of the IDG guidelines and standards.
- The RPPB, chaired by the Installation Commander, will monitor development of the installation planning process and provide guidance to other installation boards and the Garrison Commander for areas such as:
  - Strategic Planning,
  - Real Property Planning,
  - Range Planning and
  - Communications Planning.

2.4.3 **Project Approval.**

Military Construction, Army (MCA) Project Approvals. Once an MCA project is funded, the U.S. Army Corps of Engineers (USACE) will provide initial design and project management support to Hunter AAF. This initial support normally includes a planning charrette followed by a design charrette.

- The purpose of the planning charrette is to produce a draft DD form 1391 ready for the Garrison Commander's signature. It is extremely important for all appropriate design considerations to be incorporated into the 1391 to ensure that funds are available for sustainability and antiterrorism. The 1391 also spells out the basic physical characteristics of a project, such as the number of stories, the type and pitch of the roof and the exterior finish, to ensure that proper funds are programmed. A site location and site plan are developed during the planning charrette and dictate the appearance of the proposed facility based on the visual zone of the selected site. The planning charrette is a process that includes an on-site workshop that involves participation by Master Planning staff, USACE staff, user organization representatives, technical specialists and others with vested interests in the project.
- After a project is funded by the Department of the Army, a design charrette is conducted. The purpose of the design charrette is to further clarify and define the physical and programmatic aspects of the project and to complete the DD Form 1391. Master Planning staff, USACE staff, user organization representatives, technical specialists, the project architect and engineer and others participate in the design charrette to ensure that the scope and costs are fully defined. Proper completion and documentation of the design charrette ensure that the cost estimate and project justification fully address user requirements and all IDG criteria.
- Master Planning will coordinate participation by appropriate Garrison representatives in meetings to finalize the design and incorporate appropriate IDG criteria. The request for proposals (RFP) for design architect and engineer will reference the IDG, and require the designer or contractor to comply with it. Any deviation from the IDG guidance requires that a waiver request be submitted to Master Planning. A DPW project manager will provide installation oversight and guidance during construction.

Project requests (include a Form 4283 Work Order Request) shall be submitted to the DPW and will include the required Design Team IDG Checklist.

- Operation and Maintenance Army (OMA) Project Approvals. OMA projects are prioritized and funded based on an Initial Job Order (IJO) "Work Order" review process. Each OMA project will be assigned an IJO which will be distributed to related agencies for comment. Initial IDG guidance will be provided by Master Planning. Once the project is funded, Master Planning will function as the IDG proponent, ensuring that IDG standards are incorporated into the design or RFP. The installation will participate in meetings to finalize the design and incorporate appropriate IDG criteria. The RFP will reference the IDG and requires the designer or contractor to comply with it. Any deviation from the IDG guidance requires a waiver request be submitted to Master Planning. A DPW project manager will provide installation oversight and guidance during construction.

2.4.4 Self-help Projects and Occupant Purchased and Installed Site Furnishings and Features Projects.

Self Help Projects will be requested using an IJO. Once the IJO is received, it will be distributed to related agencies for guidance. Master Planning will provide assistance and guidance to ensure that the project conforms to the IDG.

2.4.5 Request for Waiver.

A request of waiver from the Design Team IDG Checklist will be submitted to the Master Planning office for approval by the DPW.

2.4.6 Checklists

Design Team IDG Checklist

The Design Team IDG Checklist is to be completed by the design team to assure the IDG guidelines and standards have been considered in the design process. The Design Team IDG Checklist form is provided in Appendix A.

The Designer of Record or Design Agent shall provide a copy of the completed checklist to Master Planning, together with a signed certification statement with each design submittal. The checklist, along with concept site plans and elevations for each design submittal, shall be provided to the Master Planning for review. If Master Planning concurs, the plan and the signed checklist are forwarded to the RPPB for final approval.

The accepted checklist shall become a part of the DPW project manager record files.

Projects Requirements Checklist

It is recommended that this checklist be used by the DPW project manager as a pre-design planning tool for initiating projects and to present a functional description of the project at MILCON planning and design charrettes. The checklist can assist participants of the charrettes in project formulation and documentation. The checklist can assist participants of the charrettes in project formulation and documentation. The checklist should be completed to the extent possible prior to the charrettes. The checklist will be completed during the charrettes and can be used to document the decisions made in the process. The Projects Requirement Checklist is provided in Appendix B.

Interior Design Review Checklist

It is recommended that the Interior Design Review Checklist be used during review of an RFP submission, an architectural/ engineering firm design, or in-house design prior to solicitations. The Interior Design Review Checklist is provided in Appendix C.

2.4.7 The requirement to use the IDG as a design tool in all facility planning, design and construction should be included in RFPs for new projects, in scopes of work for new projects and in maintenance agreements.

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SECTION 3
DESIGN GUIDE ANALYSIS CRITERIA

3.1 INTRODUCTION

3.1.1 The Hunter AAF IDG process depends upon the development of visual goals and objectives and the identification of visual elements. Goals and objectives provide the desired visual context of the installation.

3.1.2 Basic design principles are used to assess, define and classify visual elements. This assessment becomes the design criteria used to determine the visual character of the installation. These design criteria are used for design decisions in the review of existing visual context and determination of project recommendation.

3.2 GOALS, OBJECTIVES AND RECOMMENDATIONS

3.2.1 Hunter AAF must have facilities that adequately support the mission of the 3rd Infantry Division (3rd ID), 3/160th Special Operations Aviation Regiment, 1/75th Ranger Regiment and all tenants. These facilities must also provide an overall environment of quality and protection for the force necessary for national security. The Garrison Commander's means for unifying planning and programming for installation real property management, development and associated services is the master planning process. This process is recorded in the Real Property Master Plan (RPMP). The RPMP documents a long-term investment strategy for achieving the Garrison Commander's goals by providing quality facilities while supporting the Army's vision for current and future missions (Fig. 3.1).

Fig. 3.1 – A rendering of the Army Community and Family Readiness Center.

3.2.2 The IDG, a component of the RPMP, provides for the visual aspects of the Hunter AAF RPMP. The goal is to implement the Southern Living Station of Choice theme. This theme creates a community environment where soldiers and their families want to be stationed. The visual aspects in the IDG including the improvement recommendations are the goals to be achieved through planning, design and construction services at Hunter AAF.

3.3 IDENTIFICATION AND CLASSIFICATION OF VISUAL ELEMENTS

3.3.1 Basic design principles define visual elements and assess their character.

3.3.2 The assessment and classification of visual elements follows basic design principles describing "most preferred" and "least preferred" design. This assessment becomes the design criteria used to determine the visual character of the installation.

3.4 DESIGN PRINCIPLES

The visual inventory and analysis requires an understanding of basic design principles. The primary principles are:

- **Scale -** The proportional relationship of humans to their spatial environment. The scale should result in a comfortable relationship for the user and will vary as space, size and activities vary (Fig. 3.2).
- **Form -** The size and shape of mass. Individual forms should be designed to complement one another and the environment.
- **Function –** The use of a space or an area. Function is gauged by the degree to which the space works for its intended purpose.
- **Color –** All elements of the visual environment have color. The use and arrangement of colors greatly determine the visual impact of all elements.
- **Texture –** All elements of the visual environment have texture. The use and blending of textures greatly impact the visual environment.
- **Unity –** All elements of the visual environment should blend to complement one another. Repetition of scale, form, color and texture results in a unified visual impression.

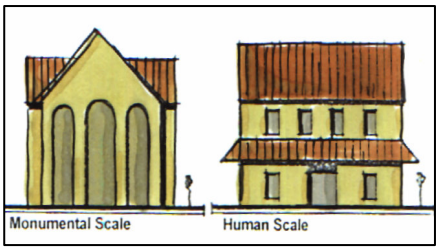

Fig 3.2 – Sketches of monumental scale and human scale buildings.

- **Framing –** All views include a ground plane, side planes and overhead plane. The relationship of planes changes as the individual moves through the environment

- **Axis –** An axis is a linear progression of space connecting two or more dominant features (Fig. 3.3).

- **Terminus –** A terminus is the end of an axis and is typically defined by a dominant feature such as a building (Fig. 3.3).

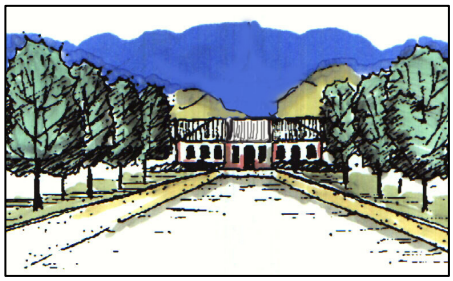

Fig 3.3 – An illustration showing a parade ground with a building at the terminus of the long axis.

- **Balance –** Visual elements are composed to be symmetrical (Fig. 3.4) or asymmetrical. In either case, visual elements should be sized and located to provide visual balance.

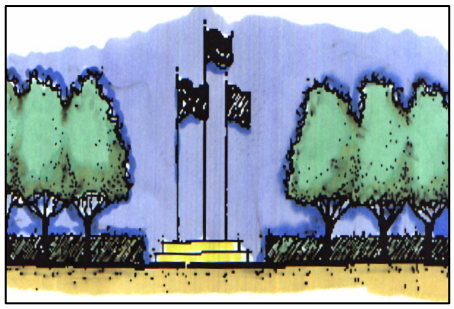

Figure 3.4 – A sketch showing trees and flag poles in a symmetrical arrangement.

- **Sustainability -** Practicing the principles of sustainable design in the planning, design, construction and operation of infrastructure and facilities is a smart business practice (See Appendix D).

3.5 VISUAL ELEMENTS

The visual elements, described below, include manmade and natural features and their interrelationships. This IDG provides guidance on how to recognize the visual elements of Hunter AAF and how to improve upon them if warranted.

- **Natural Characteristics -** Regional and site characteristics that are preserved and enhanced contribute to the unique visual quality of the installation (Fig. 3.5).

Fig. 3.5 - Live oak trees are characteristic vegetation in the region. Individuals and stands of live oak are preserved at Hunter AAF.

- **Edges and Boundaries -** Linear elements such as walls, fences, or trees create separation of use and activities (Fig. 3.6).

Fig. 3.6 – Trees and shrubs are used to visually separate incompatible land uses.

- **Buildings and Structures –** Buildings are the dominant features within the cantonment area. Their location and design characteristics define the primary visual image of Hunter AAF (Fig. 3.7).

Fig. 3.7 – The gym is an important new building for soldiers and their families at Hunter AAF.

- **Activity Nodes -** Activity nodes are locations that attract people on a daily basis (Fig. 3.8).

Fig. 3.8 - The PX and Commissary are major activity centers at Hunter AAF.

- **Landmarks -** Visually or historically prominent features such as towers, statues, static displays and buildings that provide identity, image and orientation (Fig. 3.9).

Fig. 3.9 - The flag circle at Garrison Command Headquarters is a key landmark.

- **Entrances and Gates -** Installation gates provide the first and last impression of the installation (Fig. 3.10).

Fig. 3.10 - The Main Gate inspires a particularly good impression of Hunter AAF.

- **Circulation System -** The circulation system includes streets, railroad tracks, trails, sidewalks, parking lots, driveways, delivery areas and bicycle paths. It uses a large amount of space and creates significant visual impact (Fig. 3.11).

Fig. 3.11 - Many of the barracks are connected by a pedestrian and bicycle route.

- **Trees and Other Vegetation -** Trees and other vegetation frame views, provide visual screens, shade, color and interest on the installation (Fig. 3.12).

Fig. 3.12 - Mature trees and shrubs provide shade, screen parking and enhance views of buildings.

- **Street Trees -** Street trees soften, complement and define the road hierarchy and improve the overall visual quality of the installation (Fig. 3.13).

Fig. 3.13 - Mature street trees along Wilson Boulevard enhance the experience of entering Hunter AAF.

Views and Vistas - Scenic and attractive views and vistas should be enhanced. Unattractive views should be screened (Fig. 3.14).

Fig. 3.14 - Broad views across and around the airfield are striking

- **Open Spaces -** Open space areas create visual impact and can be designed to either separate or integrate adjacent uses (Fig. 3.15).

Fig. 3.15 - Green space near the lake provides open space for use and separates the Headquarters and Installation Support visual zones.

- **Signage -** A coordinated installation signage plan, addressing both exterior and interior signage, facilitates circulation and provides useful information (Fig. 3.16).

Fig. 3.16 - Uniformity among organizational signs contributes to way-finding and visual quality.

- **Utility Corridors -** Utilities should be in corridors and unsightly above-ground utilities should be minimized (Fig. 3.17).

Fig. 3.17 - Building complexes appear new and clean when utility lines are underground.

Other Elements - Visual elements other than those identified in Section 3.5 may occur within an installation and should be noted (Fig. 3.18).

Fig. 3.18 - Static displays exhibit military hardware and memorialize the history of the 3rd Aviation Regiment.

Links

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SECTION 4
INSTALLATION PROFILE

4.1 SETTING

4.1.1 Primary Mission

The primary mission of Hunter AAF is to provide aviation support to the 3rd ID in the Rapid Deployment Force. Hunter AAF also supports tenant activities including the 3/160th Special Operations Aviation Regiment, the Georgia Army National Guard, the Navy/Marine Corps Reserve Center and the U.S. Coast Guard Air Station. Hunter AAF is strongly positioned to meet the needs of today's Army and has a strategic vision to support the Army in the 21st century.

4.1.2 Regional Setting

Hunter AAF is located in northeast Georgia (Fig. 4.1) and is within the city limits of Savannah (Fig. 4.2). The installation occupies a linear site encompassing 5,370 acres and running in a northeast to southwest direction, approximately two miles wide by five miles long.

The airfield is in the center of the installation with the runway oriented east-west. North of the airfield the installation is predominantly developed with buildings and other facilities. South of the airfield the installation is predominantly woodlands, marsh, recreational areas and other open spaces.

Primary access to Hunter AAF is through Wilson Gate from White Bluff Road and the Abercorn Extension. Montgomery Gate provides access from Lynes Parkway and downtown Savannah.

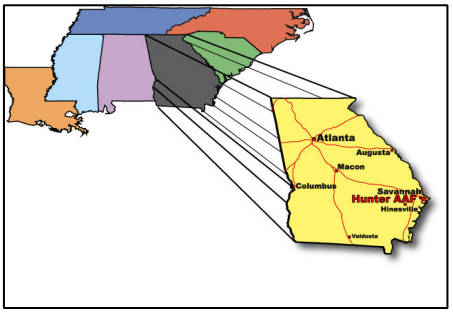


Fig. 4.1 - Hunter AAF Location Map

Both gates provide grand entries with attractive tree lined boulevards. The Rio personnel gate is located near Lotts Island.

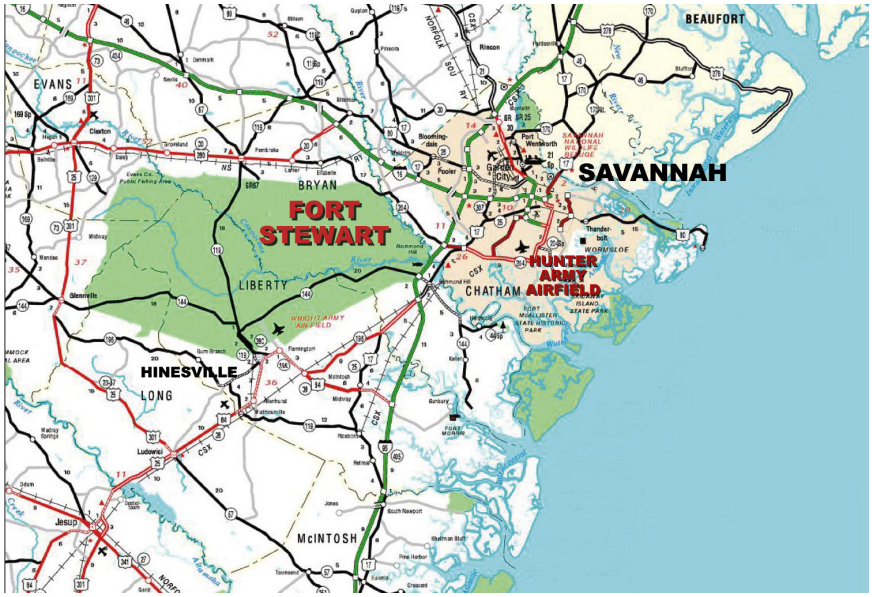


Fig. 4.2 - Hunter AAF Vicinity Map

The developed areas of Hunter AAF other than the airfield are predominantly occupied by airfield support and maintenance facilities, administrative buildings, barracks, various headquarters and operations buildings, community facilities and family housing. A variety of open spaces are interspersed with the buildings and other facilities producing a comfortable and attractive working and living environment.

Hunter AAF was surveyed to identify visual themes and zones. Seven visual zones were defined based on their visual features, architectural trends, and the functions of their predominant facilities. Southern Living Station of Choice is the architectural theme to be used for the design and construction of facilities in these visual zones. Paragraphs 4.2 and 4.3 of this section and Section 5, Visual Zones provide further information on land use areas including associated visual zones and themes at Hunter AAF.

Fig. 4.3 - Savannah was founded by General James Oglethorpe in 1733.

4.1.3 History of the Installation

The area surrounding Hunter AAF has a rich history dating back to the establishment of the 13 colonies. The City of Savannah dates back to 1733, when James Oglethorpe carefully selected the site for a new settlement (Fig. 4.3). The nearby town of Sunbury rivaled

Savannah as an important military and commercial seaport, until it was destroyed by the British in 1782. Other sites of historic significance in the region are Fort King George, Fort Morris and Fort Argyle (located within Fort Stewart's boundaries).

An unimproved airstrip was first laid out on the rural site by barnstormers in the early 1900s. The City of Savannah established a municipal airport on the site in 1928. The name, Hunter Field, was selected to honor World War I flying ace, Frank O'Driscoll Hunter.

During World War II, the Army acquired the airfield for use as an operational training facility, staging field and separation center. After the war, operation of the field was returned to the city until 1950. At that time, the Air Force traded nearby Travis Field for Hunter Field and 3,500 acres. Operation of the airfield returned to the Army in 1967, and was used for flight training through 1973. After a year in caretaker status, Hunter AAF reopened in 1974 to support the 24th Infantry Division. The Division was reflagged as the 3rd Infantry Division (Mechanized) in May 1996. Hunter Army Airfield is designated a Class 1 Army Installation requiring that new development phase out obsolete temporary buildings.

4.1.4 Environmental Setting

The following paragraphs provide information on the environment for Hunter AAF. Further information can be found in the Integrated Natural Resources Management Plan (INRMP), the Integrated Cultural Resources Management Plan (ICRMP) and the Baseline Environmental Report for Hunter AAF (including supplements).

Topography

The topography is typical of the Atlantic Coastal Plain physical features in this area. The installation is relatively level although a ridge runs from north to south through the eastern portion of the installation. The ridge directs most drainage to the Little Ogeechee River in the southwest. Relatively small changes in elevation have significant effects on vegetation, with wetlands and hardwood forests in lower areas and upland pines and scattered hardwoods at higher elevations.

Geology

The land forms in the area of Hunter AAF have developed from marine terraces formed by fluctuations in sea level during the Pleistocene time period. The terraces were formed by deposition of waterborne sediments that have been subsequently sculpted at different levels by wave action.

Soils

Most soils at Hunter AAF are characterized as being sandy and acidic. They are also low in natural fertility and organic content. Although the water table in this area is often high, the water retention capacity of the soils is low due to their high permeability. Much of the rainfall percolates readily through the soil and moves dissolved and suspended materials downward.

Most soils at Hunter AAF are classified in the Cape Fear, Ellabelle loamy sand, Ocilla, and salty tidal marsh soil series. Many of the soils are well suited to the production of forest stands but are unsuitable for supporting the movements of heavy equipment during wet periods.

The U.S. Department of Agriculture Soil Conservation Service--now the Natural Resources Conservation Service--completed soil surveys for Hunter AAF. Although adequate for general use, the surveys are somewhat inaccurate. Site specific soils testing may be required for grounds maintenance, turf management, facility construction, or other intense land use. A summary listing of soils for Hunter AAF and a soils classification map are included in the INRMP.

Climate

The subtropical climate of the region is pleasant with mild, short winters and long spring and fall seasons. Hot and humid summer weather normally extends from June through September. Abundant sunshine and rainfall produces a favorable environment for the vigorous growth of vegetation.

The average annual temperature is the region is 70ºF. Average summer temperatures range from 68º F to 91º F. Average temperatures during the winter months range from 38º F to 70º F.

Wind speeds rarely exceed ten miles per hour, except during thunderstorms, hurricanes or tropical storms. The hurricane season runs from June through November, with storms in the later three months being the most prevalent. Yearly rainfall averages around 50 inches, half of which falls during the thunderstorm season of

June through September. The wettest months are July and August, and the driest is November.

Hydrology

Most surface waters on Hunter AAF belong to the Ogeechee River drainage system. The Little Ogeechee River marks the western edge of Hunter AAF and drains most of the installation. Tides exert a great influence on the river, and salt water carries upstream for some distance. Much of the river shore consists of fresh to brackish tidal marshes, making the river an insignificant source of drinking water. Drainage within the cantonment area is by means of storm drains, ditches and swales that discharge into nearby streams and canals. The high percentage of impermeable surfaces at Hunter AAF creates large amounts of run-off which eventually flows into the marsh and river system.

There are three distinct aquifer systems in the region. The principal artesian aquifer is a deep layer of limestone dating back to the Eocene or Oligocene age. This aquifer is the primary source of large ground water withdrawals in the coastal area. The aquifer is generally 300 to 500 feet below the surface and is overlain by two shallow aquifer systems. The surface aquifer is composed of a relatively thin layer of sands, gravels, and clays, extending to a depth of approximately 80 feet near the coast. The surface aquifer is recharged directly from rainfall percolating through sediments.

During dry months, the base flow of streams and rivers of the coastal area is maintained by discharge from the surface aquifer. Water ranges in quality from that which is very low in total dissolved solids to that which is slightly alkaline and moderately hard. The two shallow aquifer systems are used almost exclusively for domestic water, but mainly as a secondary water supply rather than for drinking water.

Groundwater from the deep aquifer provides potable water for Hunter AAF. The installation has two potable water supply wells and six secondary wells that are tested each month and each quarter, respectively. Water drawn from the wells fully meets the standards of the Georgia Environmental Protection Division, Department of Natural Resources.

Vegetation

A wide variety of plant materials thrive in this region, due to the favorable climate and variety of soil conditions. The area is located in the northern portion of plant hardiness Zone 9 (United States Department of Agriculture Plant Hardiness Zone), which also

includes most of central and northern Florida and the Gulf Coast region. Native vegetation ranges from the sedges of the wetlands to palmetto, pine and oak woodlands in the higher elevations. Introduced varieties of plant material adapt well to this area.

The mixed forest environmental community that once existed in the southeastern U.S. has been broadly altered or replaced. The regionally established communities of longleaf pine and wiregrass, and additional habitat types that depend on the longleaf pine community, comprise the overall ecological unit that is managed under the INRMP. The longleaf pine community is the keystone environmental component.

Wetlands

Hunter AAF contains approximately 1,400 acres of wetlands. The installation uses the *National Wetlands Inventory* for wetlands identification. This inventory is considered reasonably accurate but requires updating as additional areas are evaluated. The INRMP provides for measures to protect, restore and mitigate impacts to wetlands on Hunter AAF.

Wildlife

Hunter AAF has a diverse animal population. Large species such as white-tailed deer and smaller mammals such as grey squirrels are common, and have remained relatively undisturbed by urbanization. Other animal communities in the area have been drastically affected. For example, feral hogs have practically been eliminated in the area of the installation. The INRMP provides a list of confirmed animals and ones that are threatened, endangered, or of special concern on the installation.

Plant and animal diversity, habitat productivity and environmental stability are greatly increased by the variety of natural habitat types. Habitat classifications (such as Longleaf Pine-Wiregrass, Pine Flatwoods, Bay Swamp and Herb Bogs) and community classifications (based on land cover types such as Southern Mixed Hardwood Forest and Upland Pine Forest) have been developed for the plants located in this region. Some land areas within the cantonment are designated as “no mow” areas to promote the development of forests, grasslands and wildflowers.

The Nature Conservancy identifies 1,066 plant species from 724 sites on Fort Stewart and Hunter AAF. A listing of threatened, endangered or special concern plants is located in the INRMP.

Environmentally Sensitive Habitat

The Nature Conservancy's *Fort Stewart Inventory* includes descriptions of 36 conservation sites for Fort Stewart and Hunter AAF. The Nature Conservancy defines conservation sites as "areas of significant biodiversity, harboring concentrations of rare species and containing highly intact natural communities." Information includes the conservation site name, size, rank, training area, living resources summary, site description, threats to sites, and recommendations for monitoring and management.

Cultural Environment

Hunter AAF has an ICRMP that addresses historic and archeological preservation. Several sites on the installation have been identified and investigated for their historical and archeological significance. This process determines if the site is eligible for inclusion into the National Register of Historic Places (NRHP). Protective measures are implemented for eligible and included sites. The ICRMP contains further information on NRHP site investigations on the installation and other regulations pertaining to historical and archeological requirements.

Man-Made Environment

The natural environment at Hunter AAF has been modified by the construction of buildings, roads, parking areas, storm water management ponds and other land altering uses. The installation RPMP is the key source of information on the existing and planned development of the installation.

Contaminated Areas

The Installation Restoration Program (IRP) and associated Installation Action Plan (IAP) for Hunter AAF contain information on the various environmental contaminants of concern (metals, volatile organic compounds, petroleum hydrocarbons, etc) and their locations. Extensive clean up actions have taken place to ensure the safety of these locations. The IAP contains the schedule, costs and work scopes for past, present and future remediation activities at the installation.

Solid Waste Management

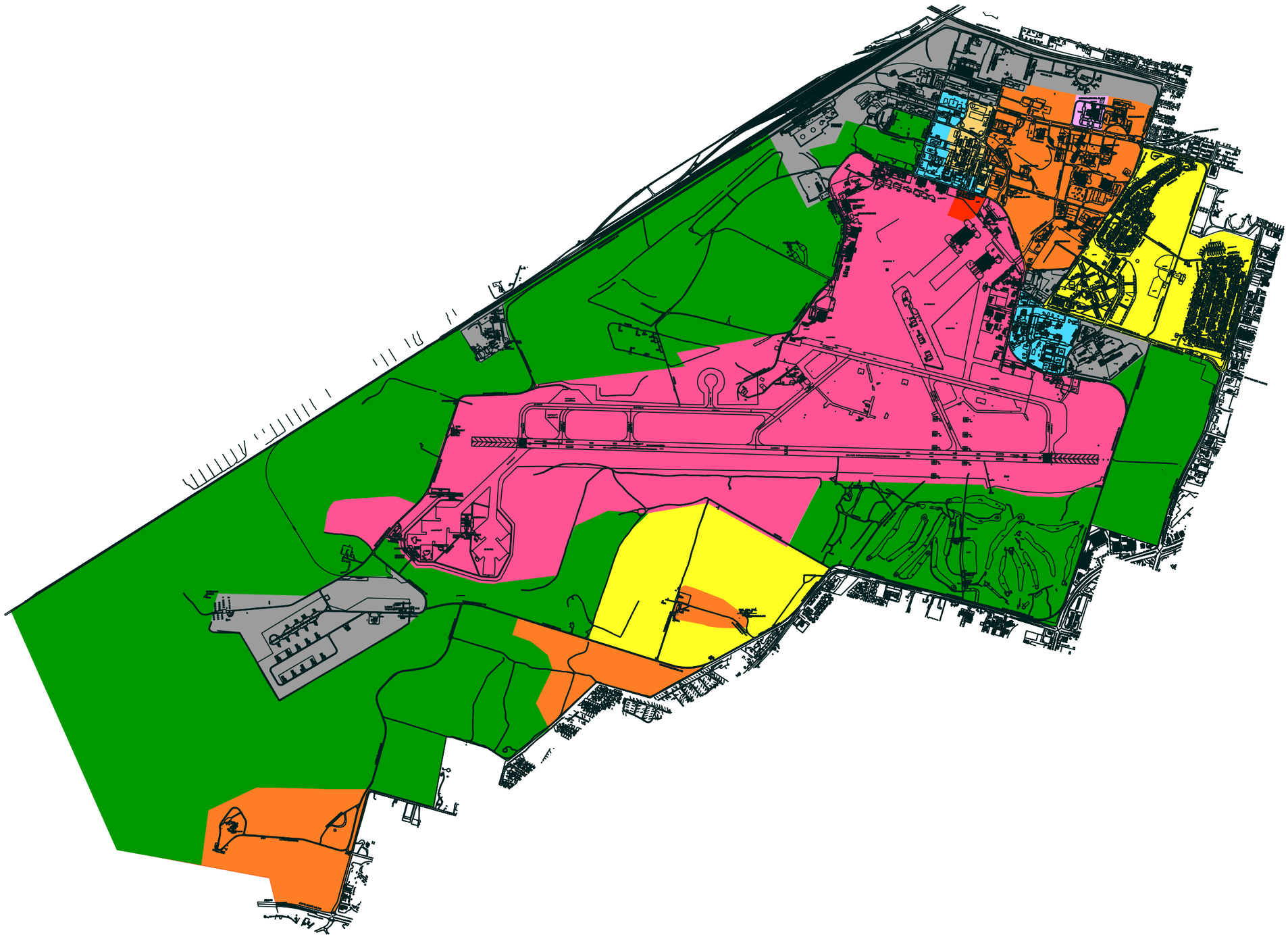
Hunter AAF has a recycling program for paper items, bottles, cans, scrap metal, printer and toner ink cartridges, cardboard and wooden pallets. Recycling dumpsters and containers are provided for collection; however, some recyclables are not collected and must be taken to the recycling center.

4.2 LAND USE

Land use classifications at Hunter AAF are as follows: Administration, Green Space, Family Housing, Barracks, Community, Industrial, Airfield, Medical and National Guard. Map 4.1 shows the designated land use areas for Hunter AAF. The installation real property master plan is the source document for further information on land use.

4.3 VISUAL ZONES

Visual zones at Hunter Army Airfield are designated as follows: Headquarters, Town Center, Barracks, Installation Support, National Guard, Housing and Green Space. Information on the definition and appearance of these visual zones is contained in Section 5, Visual Zones.



LEGEND:

LAND USE

- ADMINISTRATION
- COMMUNITY
- BARRACKS
- AIRFIELD
- NATIONAL GUARD
- FAMILY HOUSING
- GREEN SPACE
- INDUSTRIAL
- MEDICAL

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LAND USE

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MAP 4.1

SOURCE: Directorate of Public Works, office of master Planning, Visual Districts Map 11/22/04

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SECTION 5
VISUAL THEMES AND ZONES

5.1 INTRODUCTION

5.1.1 Visual themes and zones were determined after performing the two surveys described in Section 2.2.1. These surveys were conducted using existing installation maps, visual inspection, interviews, questionnaires and photographs to record impressions of visual and spatial impacts. The data captured was used to define the visual themes and zones of the installation.

Visual zones are shown on Map 5.1. Table 5-1 shows how the visual zones are grouped to define the visual themes for Hunter AAF. The visual themes are based on the general relationships between the land uses that are included in the visual zones.

5.2 VISUAL THEMES

5.2.1 Visual themes create a perception of unification within the installation. These themes create design consistency that provides orientation and a "sense of place".

5.2.2 Visual themes are generalized groupings of visual zones with similar use and visual characteristics. Visual themes include broad scale activities that occur on the installation. These activities typically include similar design and layout characteristics.

Table 5-1 shows the theme/visual zone relationship throughout the installation.

TABLE 5- 1 THEME/ZONE RELATIONSHIP

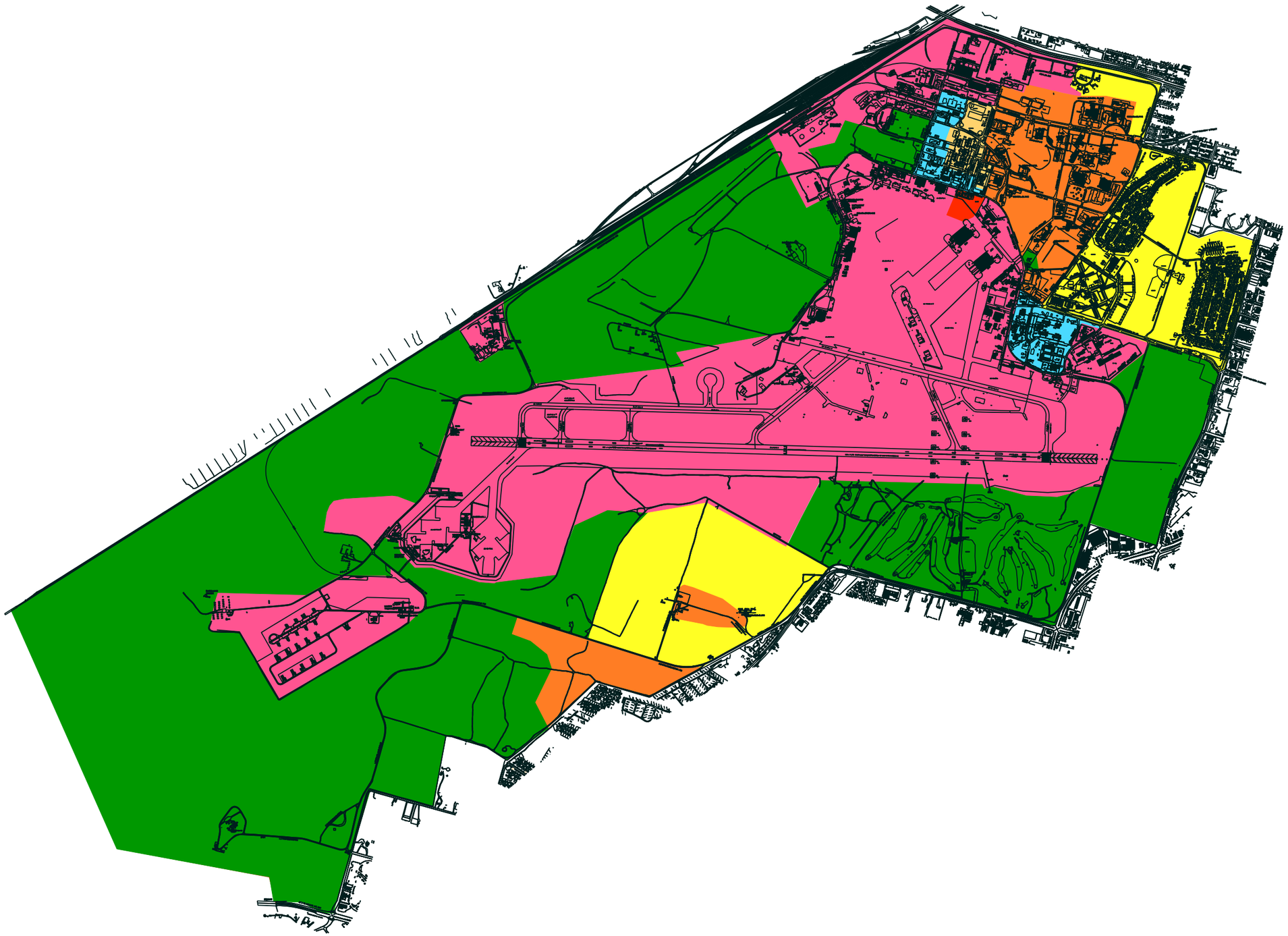
NEIGHBORHOOD THEME	CENTRAL CAMPUS THEME	OPERATIONS THEME
Family Housing Visual Zone Green Space Visual Zone (part)	Headquarters Visual Zone Town Center Visual Zone Barracks Visual Zone Green Space Visual Zone (part)	Installation Support Visual Zone National Guard Visual Zone

5.3 VISUAL ZONES

5.3.1 Visual zones are areas within the installation that include similar visual characteristics. Visual characteristics define a "look and feel" of an area together with the dominant features that define its image. Typical visual characteristics include unique buildings, vehicular and pedestrian corridors, natural features and spatial relationships.

5.3.2 The following paragraphs present a functional analysis of each of the visual zones. This analysis includes a description of the visual character, a visual analysis map, assets, liabilities and recommendations for each zone.

5.3.3 The visual analysis maps graphically illustrate the features and constraints that affect the visual character of the zone.



LEGEND:

VISUAL ZONES

- HEADQUARTERS
- TOWN CENTER
- BARRACKS
- INSTALLATION SUPPORT
- NATIONAL GUARD
- HOUSING
- GREEN SPACE

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VISUAL ZONES

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MAP 5.1

SOURCE: Directorate of Public Works, Office of master Planning, Visual Districts Map 11/22/04

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5.3.4 Assets and liabilities are determined according to the following criteria: installation visual goals and objectives (Section 3.2), design principles (Section 3.3) and visual elements (Section 3.4) in relationship to the six design components described in Sections 7 through 12 of this Army Installation Design Guide.

5.3.5 Recommendations are made to correct the liabilities or enhance the assets. These recommendations are used to generate projects that are listed in Section 6, Improvement Projects.

5.4 HEADQUARTERS VISUAL ZONE

5.4.1 Visual Character

The Headquarters Visual Zone includes the primary entry road, Wilson Boulevard and the areas around the Post and Brigade Headquarters buildings. The administrative function of this zone should be projected through a sense of identity, importance and prominence. The existing site and building design do not adequately meet this goal.

The Garrison Headquarters building is located at the terminus of Wilson Boulevard. The Brigade Headquarters building is located in front of the large hangars along Lightning Road. These sites are prominently located and close to each other along two primary vehicular routes. These relatively small-scale buildings lack design detail and interest and do not project the significance and sense of purpose appropriate to their command and control function.

The street trees lining the entire length on both sides of Wilson Boulevard accentuate its linear axis. In addition to its function as a major thoroughfare, this corridor provides an important open space element that is integral to the installations distinctive street pattern. With the exception of this boulevard, the visual zone lacks defined boundaries, green areas and common design elements. These factors combine to project a disjointed image. The road pattern divides the district into small parcels and, combined with the prolific on-street parking, presents a disorderly and uninviting image to pedestrians. Cluttered views into the adjacent industrial area contribute to this poor visual image.

5.4.2 Visual Analysis Map

Map 5.2 shows the Headquarters Visual Zone with symbols identifying the most significant visual elements located in it.

5.4.3 Assets.

Site Planning

The Garrison Headquarters is strategically located at the terminus of the main entry road, Wilson Boulevard (Fig. 5.1).

Fig. 5.1 – View of Garrison Headquarters on approach from the East, along Wilson Boulevard.

The 1st and 2nd Battalion Headquarters building occupies a prominent hill near the two main hangars (Fig. 5.2).

Fig. 5.2 – 1st and 2nd Battalion Headquarters are on a knoll overlooking the airfield.

Buildings

Simple details in roof overhangs, windows and doors and small-scale site design, such as narrow walkways help the facilities project a human scale (Fig. 5.3).

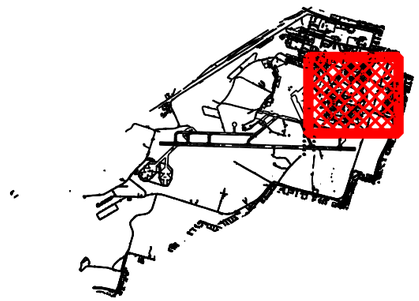
Fig. 5.3 – Architectural detail and pedestrian features in the Garrison Headquarters area produce a sense of human scale.

Circulation

A grid system of streets provides ample access to all parts of the cantonment area of Hunter AAF.

Lightning Road outlines the perimeter of the main flightline area providing a series of dramatic views of hangars and glimpses across the aircraft parking aprons (Fig. 5.4).

Fig. 5.4 – The view northeast, across the aircraft parking apron.



LEGEND:

- HEADQUARTERS VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- FOCAL POINT / LANDMARK
- GOOD VIEWS

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HEADQUARTERS VISUAL ZONE

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MAP 5.2

SOURCE: Directorate of Public Works, Office of master Planning, Visual Districts Map 11/22/04

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Plant Material

Major roadways are lined with healthy, mature trees (Fig. 5.5).

Fig. 5.5 – View of tree-lined Wilson Boulevard in the Headquarters Visual Zone.

Site Elements

Static displays of aircraft and sculptural monuments demonstrate a sense of pride and organizational continuity (Figs. 5.6 and 5.7).

Fig. 5.6 – A helicopter is on static display at the 1st and 2nd Battalion Headquarters.

Antiterrorism

The installation is fenced and has a controlled perimeter.

5.4.4 Liabilities

Site Planning

Some buildings on small sites are separated from adjacent buildings by streets with major traffic flow (Fig. 5.8).

Fig. 5.8 – The Garrison Headquarters complex is unfortunately bisected by Wilson Boulevard.

Buildings

The headquarters buildings are generally small and lack sufficient architectural character to convey their importance (Fig. 5.9).

Fig. 5.9 – The Garrison Headquarters is a low-profile structure lacking impressive detail.

Circulation

The large areas of roadway and on-street parking are unsightly and hazardous (Fig. 5.10).

Fig. 5.10 – Lightning Road links the scattered parts of the Headquarters Visual Zone but looks industrial.

Plant Material

With the exception of Wilson Boulevard street trees, there is no coordinated landscaping scheme that unifies the Headquarters visual zone (Fig. 5.11).

Site Elements

Uncoordinated signs, lighting, fencing and furnishings fail to reinforce the importance of this visual zone (Fig. 5.11).

Fig. 5.11 – Landscaping and site elements are lacking at the 1st and 2nd Battalion Headquarters.

Antiterrorism

Some buildings do not have the minimum standoff distance for occupied buildings from roadways and parking lots (Fig. 5.12).

Fig. 5.12 – The Garrison Headquarters area buildings are generally lacking minimum standoff distance.

5.4.5 Recommendations

Site Planning

Reroute streets in the vicinity of the Garrison Headquarters to create a pedestrian area between the buildings.

Buildings

Expand the Garrison Headquarters building to include more garrison functions and add architectural detail and character to make it more visually prominent.

Circulation

Consolidate traffic on fewer streets and create standard intersections to accommodate traffic better and to create larger blocks for parking, standoff distance and eventual redevelopment.

Plant Material

Continue the landscaping theme along Wilson Boulevard along streets connecting the parts of the Headquarters Visual Zone.

Site Elements

Replace elements as they deteriorate or upgrade when new buildings are constructed. Use a limited selection of styles for lighting, seating, etc. and coordinate the designs to produce a unified visual effect.

Antiterrorism

Increase standoff distances for occupied buildings wherever possible.

5.5 TOWN CENTER VISUAL ZONE

5.5.1 Visual Character

The Town Center Visual Zone is centrally located in the cantonment area and provides retail, recreational and social services activities for on- and off-post personnel. This large district appears to be architecturally cohesive but its visual boundaries are difficult to define because the buildings are on unrelated sites.

Major structures in the commercial core area include the Post Exchange, Theater, Bowling Center and the Enlisted Men's Services building. The responsive yet distinctive design of the more recently constructed Post Exchange is aesthetically appealing and an obvious source of pride for the Hunter AAF community. Other permanent buildings in the zone include the Hunter Club, Guest House, Shoppette and Class 6 Store, Skill Development

Center and Gymnasium. Most buildings are not visually or functionally related and are spread over a large area, resulting in poor pedestrian connections between the buildings.

Most facilities serve as independent activity centers due to their isolated siting. Pedestrian circulation is poorly developed within and between groups of buildings. The major streets lack a hierarchy of development, such as pavement width, curbs, or street trees, to define and direct primary circulation. Parking lots serve single buildings rather than building groups.

Fig. 5.13 – The Shoppette is located on a convenient intersection.

5.5.2 Visual Analysis Map

Map 5.3 shows the Town Center Visual Zone with symbols identifying the most significant visual elements located in it.

5.5.3 Assets

Site Planning

Many facilities are new and are sited with good relationships between roads, parking and building entrances (Fig. 5.13).

Fig. 5.14 – The entrance to Tuttle Army Health Clinic is architecturally interesting and inviting.

Buildings

Many buildings have entrance arcades and canopies, which provide protection from the sun and rain and provide an appealing sense of scale. Overhangs, signage and architectural detailing visually articulate building entries and make them inviting (Fig. 5.14).

Important buildings have clearly identifiable entries, appropriate materials and a sense of permanence (Fig. 5.14).

Fig. 5.15 – Parking at the new Gym is plentiful.

Circulation

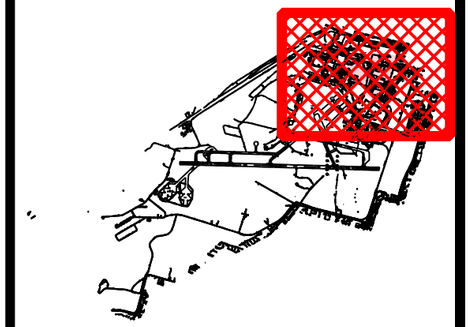
Parking is generally sufficient at most locations in the Town Center Visual Zone (Fig. 5.15).

Bike racks are provided at various community services locations.

Plant Material

On more recent projects, existing vegetation has been preserved. New plantings near buildings and parking lots provide shade, accent, overhead canopy and a pedestrian scale (Fig. 5.16).

Fig. 5.16 – Landscaping in the Commissary and PX parking lots provides shade and visual interest.



LEGEND:

- TOWN CENTER VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- SECONDARY ROAD
- FOCAL POINT / LANDMARK
- SIGNIFICANT ARCHITECTURE

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TOWN CENTER VISUAL ZONE

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MAP 5.3

SOURCE: Directorate of Public Works, Office of Master Planning, Visual Districts Map 11/22/04

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Site Elements

Site furniture, lighting, signage and other elements are new at many facilities and provide a generally coordinated appearance.

Fig. 5.17 – Concrete planters at the PX provide temporary standoff distance.

Antiterrorism

Most buildings with moveable barriers have planters or bollards instead of rough concrete blocks (Fig. 5.17).

5.5.4 Liabilities

Site Planning

Scattered building sites, with building orientations that do not visually or functionally relate to each other, discourage pedestrian circulation between buildings.

In some cases, there is no separation between streets and facilities such as at the Shoppette and Class 6 Store on Barksdale Circle and the Skill Development Center on Leonard Street (Fig. 5.18).

Fig. 5.18 – Wide open approaches to the Shoppette create confusing vehicular circulation.

Buildings

The Guest House is not tied into the pedestrian system and lacks human-scale site amenities such as outdoor seating areas (Fig. 5.19).

Fig. 5.19 – View of the front of the Hunter AAF Guest House.

Circulation

An overemphasis on vehicular needs at some facilities, such as the theater, Enlisted Men's Service Club and Hunter Club, create massive parking areas with insufficient pedestrian amenities and landscaping (Fig. 5.20).

A link between community facilities such as schools and the neighborhoods they serve should be emphasized. Setbacks and right-of-ways should allow for the inclusion of a pedestrian and bikeway that will link this visual zone with the Barracks and Housing visual zones.

Fig. 5.20 – Pedestrian amenities are limited for people arriving at the Hunter Club.

Plant Material

Inconsistent landscape design at key locations and the overall landscaping effect does not visually reinforce the impression that one is within the Town Center Visual Zone (Fig. 5.21).

Fig. 5.21 – Randomly scattered trees and occasional shrubs do not establish a design theme.

Site Elements

Many site elements, such as signage and site furnishings, are not consistent throughout the visual zone. There are no unifying streetscape elements within the visual zone, such as lighting, seating and signage (Fig. 5.22).

Fig. 5.22 – Street lights and landscaping vary from street to street throughout the visual zone.

Antiterrorism

Some older buildings do not have adequate standoff distance for occupied buildings (Fig. 5.23).

Fig. 5.23 – Parking at the Hunter Club Annex is located adjacent to the buildings.

5.5.5 Recommendations

Site Planning

Rearrange access and parking to some sites to improve visual and functional relationships between key buildings and to allow for parking beside or behind buildings when there is insufficient space in front.

Buildings

Provide a clear and generous pedestrian link between the old and new Guest Houses and the rest of the Town Center Visual Zone.

Circulation

Install landscaping, crosswalks, seating and other amenities along walkways linking key commercial buildings. Concentrate pedestrian traffic on a few well-located paths so people do not walk in all directions when moving between destinations.

Add pedestrian and bicycle routes between the Town Center Visual Zone and the Barracks, Housing and Headquarters Visual Zones.

Plant Material

Install new planting according to a specific theme that applies throughout the visual zone. New planting should begin with street trees to produce an initial unifying effect.

Site Elements

Replace existing and install new elements according to a theme that applies throughout the visual zone. Where some new elements have been installed recently, the design of additional items should be compatible with them.

Antiterrorism

Install permanent force protections barriers in place of temporary obstacles. Use the full range of techniques to create barriers, such as seating walls around planters, topographic depressions, dense plantings of trees and berms with vine covered and stone filled gabions on the approach side.

5.6 BARRACKS VISUAL ZONE

5.6.1 Visual Character

The Barracks Visual Zone contains an interrelated system of soldier quarters, operations buildings, dining facilities, classrooms and community commercial and recreation facilities. This visual zone is a major presence at Hunter AAF due to its large area and prominent location.

The bold style and scale of the new dormitory buildings, sited among the existing trees, projects a comfortable campus-like atmosphere. This modern, efficient facility conveys a positive impression of order and permanence.

The residents of this visual zone do not have adequate pedestrian access to other parts of the installation. Wilson Boulevard provides a pleasing formal roadway, with wide setbacks and street tree plantings, but other roads lack a hierarchy of street development. Lightning Road, which runs along the east perimeter of the visual zone is cluttered with unscreened views of parking lots, service areas and unscreened views into the Installation Support Visual Zone. The new dormitory parking lots are will-suited but lack landscape plantings. The open space east of the dormitories offers a pleasant view and an opportunity for informal recreation. The visual zone lacks recreation facilities near the barracks.

Fig. 5.24 – Preserved trees visually balance the large-scale barracks in this view.

5.6.2 Visual Analysis Map

Map 5.4 shows the Barracks Visual Zone with symbols identifying the most significant visual elements located in it.

5.6.3 Assets

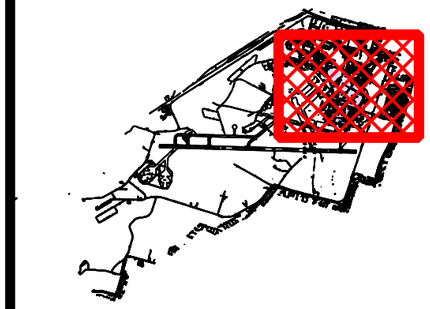
Site Planning

Native vegetation in the background softens the massiveness of the large barracks and creates a campus-like setting (Fig. 5.24).

Buildings

Distinctive architecture and a consistent color palette make this visual zone readily recognizable (Fig. 5.25). Barracks, operations and support facilities are efficiently integrated, with appropriate relationships to each other and to adjoining industrial and open space land uses.

Fig. 5.25 – Architecture and materials visually unify the Barracks Visual Zone and create a comfortable environment.



LEGEND:

- BARRACKS VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- SECONDARY ROAD

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INSTALLATION DESIGN GUIDE

BARRACKS VISUAL ZONE

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MAP 5.4

SOURCE: Directorate of Public Works, Office of Master Planning, Visual Districts Map 11/22/04

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The size, shape and materials of new barracks create a pleasing, human-scaled environment. The recessed windows create shade and help reduce the massive scale of the buildings. The building dimensions, roof overhangs, windows and doors add a comfortable human scale (Fig. 5.25). Building entries are well-defined by the architecture and provide a sense of order to the building.

Fig. 5.26 – Parking and circulation for many newer buildings are convenient and logically organized.

Circulation

Vehicular circulation and parking around the barracks and operations buildings is convenient and parking is reasonably close to building entries (Fig. 5.26).

Plant Material

Large stands of mature trees near barracks complexes and the landscaping within the courtyards add to the comfortable feeling of the residential areas (Fig. 5.27).

Fig. 5.27 – New planting in the spaces between buildings creates a comfortable and attractive landscape.

Site Elements

Walkways with uniform lighting and other site elements connect most barracks and unit operations facilities (Fig. 5.28).

Fig. 5.28 – Barracks and unit operations buildings are connected by pedestrian walkways.

Antiterrorism

Minimum standoff distances for occupied buildings are provided in most areas, but especially in the vicinity of the barracks (Fig. 5.29).

Fig. 5.29 – Standoff areas are occupied by landscaping and walkways.

5.6.4 Liabilities

Site Planning

No liabilities noted.

Buildings

Courtyards and plazas, particularly in the company operations areas and older barracks, are stark, cold and visually unappealing. Many areas do not have small trees or shrubs to provide a pleasant natural setting for the buildings (Fig. 5.30).

Fig. 5.30 – Large undefined green areas between buildings are generally under-used.

Circulation

In older developed areas, the dense grid of the vehicular circulation system sometimes conflicts with pedestrian circulation (Fig. 5.31).

Fig. 5.31 – Service areas and less interesting architectural features are visible from roadways.

Plant Material

Without adequate screening and buffering, the visual zone is highly visible from the roadways. Parking areas at the older barracks are not well-screened or landscaped (Fig. 5.32).

Fig. 5.32 – Older barracks have large trees but few shrubs to screen parking or utility areas.

Site Elements

Memorials have been placed with little consideration for siting or providing an appropriate setting and backdrop for the display (Fig. 5.33).

Fig. 5.33 – The setting does not support the quiet contemplation suggested by the benches.

Some storage facilities, dumpsters and aboveground utility structures are visible from building entries and pedestrian walkways (Fig. 5.34).

Paint schemes, pedestrian controls and signage implemented by individual units are often not adequately managed.

Antiterrorism

No liabilities noted.

Fig. 5.34 – Overflow unit storage should be placed in a storage area or enclosed in a permanent enclosure.

5.6.5 Recommendations

Site Planning

Continue with the theme already under development for site planning at Hunter AAF.

Buildings

Sterile, dull courtyards should be made more attractive and comfortable with additional detail on the building facades, landscaping and site elements.

Circulation

Vehicular traffic should be concentrated on fewer improved streets with more limited access. The remaining minor travel lanes can then be closed or incorporated into parking lots.

Plant Material

Vegetative screening should be installed at key locations along roadways to block views into the courtyards and parking lots of the barracks and operations complexes.

Site Elements

Static displays and self-help projects by individual units should be reviewed and refined by the Garrison prior to the installation of equipment or the purchase of materials for painting, pedestrian controls and signage.

Antiterrorism

Continue to improve building standoff areas with landscaping.

5.7 INSTALLATION SUPPORT VISUAL ZONE

5.7.1 Visual Character

The Installation Support Visual Zone encompasses the airfield operations, warehouses and tactical equipment maintenance facilities (TEMF). Each area uniquely reflects a different era in the development of the installation. Circulation along Lightning Road provides easy access to installation support facilities and the Barracks Visual Zone. However, the unorganized parking lots, driveways, scattered outbuildings and fencing are confusing and hinder the vehicular flow. There is little consideration for the pedestrian.

The airfield operations area is located along the perimeter of the expansive airfield apron. The two massive hangars, remnants of the USAF (SAC) era, are the largest and most prominent structures on the installation. The World War II vintage building northwest of the cantonment area provides a reminder of the original encampment era, with regimented site layout and common wood structures of simple design. These two areas project a poor visual image due to their older buildings, cluttered appearance and lack of screening.

The new TEMF area just south of Wilson Boulevard is reflective of the current development phase. It projects a positive image with well-designed, functional facilities. Here, the exposure of these industrial facilities is buffered by its location behind a dense vegetative screen.

5.7.2 Visual Analysis Map

Map 5.5 shows the Installation Support Visual Zone with symbols identifying the most significant visual elements located in it.

5.7.3 Assets

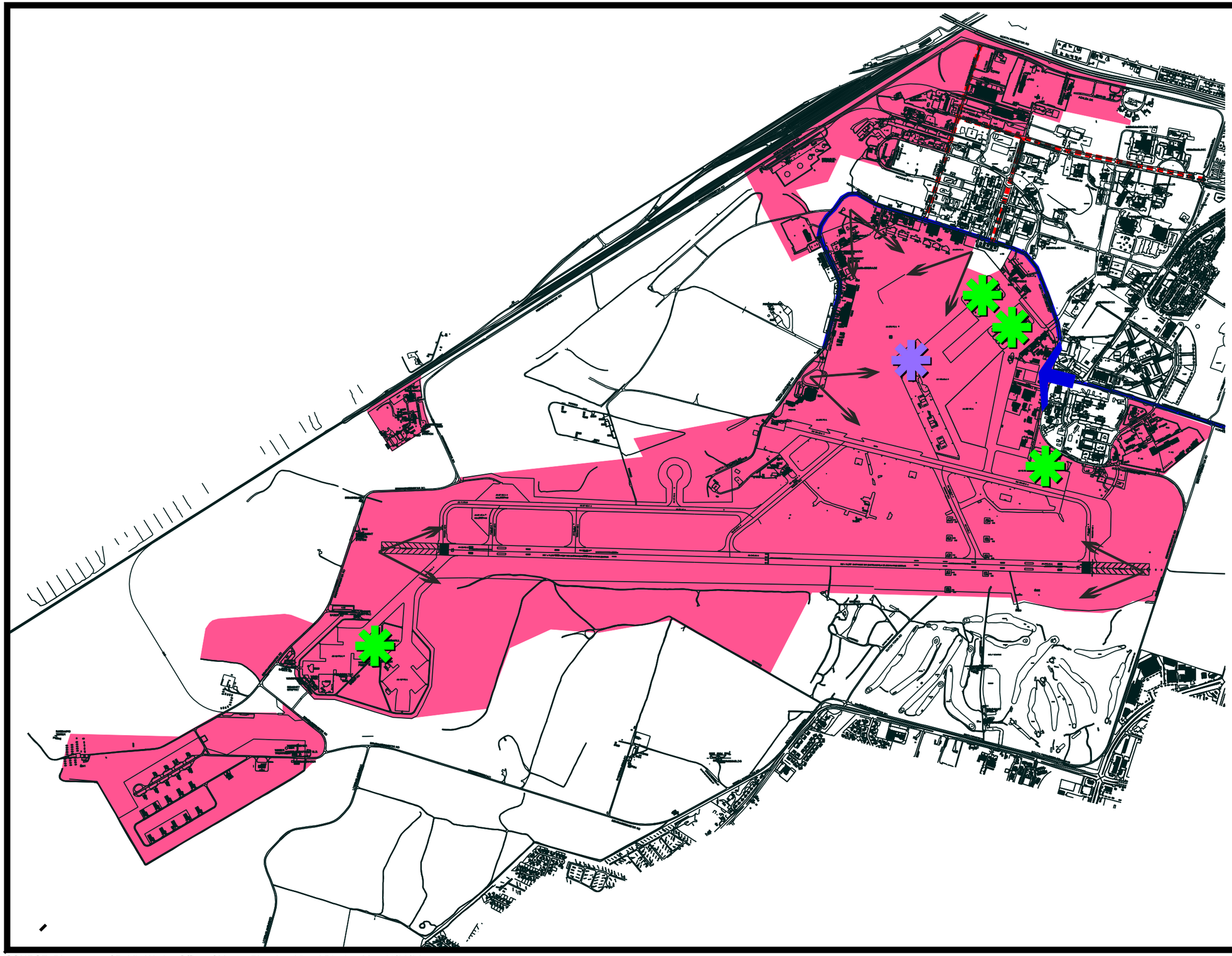
Site Planning

The Installation Support Visual Zone is located in a well-defined land use area that is clearly separate from the Headquarters, Town Center and Housing Visual Zones.

Buildings

The utilitarian appearance of facilities is appropriate for the industrial uses that are accommodated (Fig. 5.35).

Fig. 5.35 – The tower is utilitarian in design, but architecturally expressive.



LEGEND:

- INSTALLATION SUPPORT VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- SECONDARY ROAD
- FOCAL POINT / LANDMARK
- SIGNIFICANT ARCHITECTURE
- GOOD VIEWS

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INSTALLATION SUPPORT VISUAL ZONE

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MAP 5.5

SOURCE: Directorate of Public Works, Office of Master Planning, Visual Districts Map 11/22/04

Many of the airfield buildings provide a sense of the mission significance of the air operations component. The Departure and Arrival Facility (Fig. 5.36) and the hangars (Fig. 5.37) are especially expressive of this image.

Fig. 5.36 – The operational side of the Departure and Arrival Facility.

Fig. 5.37 – The hangars are huge and plain, but visually very striking.

The use of materials on the newer TEMF buildings helps reduce the scale of the large industrial buildings (Fig. 5.38).

Fig. 5.38 – The TEMF on the West side of North Lightning Road.

Circulation

Facilities in this visual zone are well-served by a road network that directly connects the various parts with three main routes (Fig. 5.39).

Fig. 5.39 – South and North Lightning Road connect all the buildings around the aircraft parking apron.

Plant Material

Many areas are visually screened from adjacent visual zones by vegetation (Fig. 5.40).

Fig. 5.40 – Trees and shrubs create a shady and interesting environment around the 3rd Battalion, 160th Special Ops headquarters.

Site Elements

No assets noted.

Antiterrorism

No assets noted.

5.7.4 Liabilities

Site Planning

The visual zone is fully visible from the major streets. Views of parking, outbuildings, cluttered equipment storage and utilities create an impression of disorganization. Some unsightly areas are visible to the general public from off-post (Fig. 5.41).

Fig. 5.41 – This area of outdoor storage and parking is visible from Staley Avenue (GA-21).

Buildings

The buildings generally lack architectural interest and are unrelated to other installation or regional architectural styles. The Airfield Operations Center has insufficient design treatment or site character to express its central function (Fig. 5.42).

Fig. 5.42 – View of the Airfield Operations Center from South Lightning Road.

Some of the older buildings are in disrepair and project a poor visual image (Fig. 5.43).

Fig. 5.43 – Use of old metal storage sheds is widespread throughout the Installation Support Visual Zone.

Several industrial buildings are long, continuous, horizontal masses, which are unarticulated and lack interest (Fig. 5.44). The light color on many of these buildings makes them appear more massive.

Fig. 5.44 – Building 1032 is large and lacks architectural character.

Circulation

Vehicular and pedestrian circulation systems are generally not separated (Fig. 5.45).

Fig. 5.45 – Much of Lightning Road has on-street parking, many crosswalks and no sidewalks.

Plant Material

Parking lots lack vegetative screening, shade, or visual breaks in the paved areas. Generally, there is continuous pavement between storage, parking lots, buildings and streets (Fig. 5.46).

Fig. 5.46 – The typical hangar parking lot lacks any vegetation.

Site Elements

There is a lack of pedestrian amenities, such as designated walkways, seating areas and lighting.

Break shelters are generally sited in unappealing areas with no shade and little, if any, green area.

Fencing is almost entirely chain link and little of it has vegetation to help screen paved areas or outdoor storage (Fig. 5.47).

Fig. 5.47 – The view from South and North Lightening Road is almost entirely through open chain link fencing.

Antiterrorism

No liabilities noted.

5.7.5 Recommendations

Site Planning

Provide screening along major roadways and between compounds to visually reduce the apparent size of hardstand areas and to obscure disorganized and cluttered outdoor storage areas.

Buildings

During renovations of older buildings, add exterior details and higher quality materials to upgrade their appearance and that of the entire visual zone. Also use architectural detailing to communicate more about the various purposes that individual buildings serve.

Replace or remove older buildings that can not be maintained and detract from the appearance of the installation, especially when they are visible from off-post or from an adjacent residential, community, administrative, or open space area.

Circulation

Develop a pedestrian walkway system that connects key locations and has minimal conflicts with vehicular circulation.

Plant Material

Continue to preserve mature trees and stands of native forest where possible.

Site Elements

Provide pedestrian and employee break area site elements, such as lighting, signs, bicycle parking, benches and shelters in a coordinated plan with landscaping to make this visual zone more appealing and comfortable for employees and visitors.

Antiterrorism

Continue to provide standoff distances for occupied buildings and primary gathering spaces.

5.8 NATIONAL GUARD VISUAL ZONE

5.8.1 Visual Character

The National Guard Visual Zone at Hunter Army Airfield occupies an area of aircraft parking apron between buildings 845 and 850 and extends northward to North Lightning Road. A new hangar for the National Guard is the first building constructed in this visual zone.

5.8.2 Visual Analysis Map

Map 5.6 shows the National Guard Visual Zone with symbols identifying the most significant visual elements located in it.

Fig. 5.47 – Looking South across the hanger site from Lightning Road.

8.3 Assets

Site Planning

The site for the National Guard Visual Zone is adjacent to Lightning Road and between buildings 845 and 850 (Fig. 5.47).

Buildings

The new hangar is under construction (Fig. 5.48).

Fig. 5.48 – Illustration of the National Guard hangar that is under construction.

Circulation

Access to the area will be directly from North Lighting Road.

Plant Material

No assets noted.

Site Elements

No assets noted.

Antiterrorism

This visual zone will be able to provide the minimum standoff distance required for occupied buildings.

5.8.4 Liabilities

Site Planning
No liabilities noted.

Buildings
No liabilities noted.

Circulation
No liabilities noted.

Plant Material
No liabilities noted.

Site Elements
No liabilities noted.

Antiterrorism
No liabilities noted.

5.8.5 Recommendations

Site Planning
No recommendations.

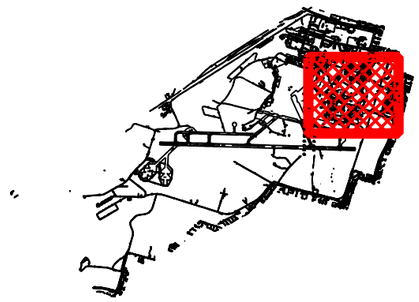
Buildings
No recommendations.

Circulation
No recommendations.

Plant Material
No recommendations.

Site Elements
No recommendations.

Antiterrorism
No recommendations.



LEGEND:

- NATIONAL GUARD VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- FOCAL POINT / LANDMARK

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NATIONAL GUARD VISUAL ZONE

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MAP 5.6

SOURCE: Directorate of Public Works, Office of Master Planning, Visual Districts Map 11/22/04

5.9 HOUSING VISUAL ZONE

5.9.1 Visual Character

The Housing Visual Zone includes the officer housing area, duplex family units and the mobile home park just north of the Wilson housing area, as well as new housing areas south of the golf course. The northern area is conveniently sited close to the community facilities and the entry gate and the southern areas are supported by a satellite community service area nearby. In the northern neighborhoods, the nearly identical units are closely grouped on long straight streets. The repetitious building and site design contribute to a monotonous and unappealing visual image. In the southern neighborhoods, the housing units are sited on larger lots with more open space between them. The streets are also wider and there is more space for parking and storage of personal items.

In the northern neighborhoods, the duplex residences are almost identical in their ranch style with low-pitch roofs. The buildings are appropriately scaled, but lack detailed fenestration and interesting form. The major construction materials include cream-colored split-face concrete masonry units, asphalt shingles and aluminum frame windows and doors. In the southern neighborhoods, the units are of a contemporary colonial design with vinyl siding, pitched roofs, porches, columns and garages.

In the northern neighborhoods, the buildings are oriented directly toward the street with a minimal regular setback, creating a repetitious streetscape. Off-street parking is provided, with driveways into carports at each end of the duplex units. There is limited storage space and many carports are used for storage, which is unsightly and increases parking in front of the duplexes. Roads are laid out in predominantly long straight runs with gentle curves. Sidewalks are provided but there is a lack of other pedestrian amenities, such as seating. Landscape plantings are limited in extent and variety. In the southern neighborhoods, the buildings also face the streets, but the setbacks are deep and there is generous space between buildings.

5.9.2 Visual Analysis Map

Map 5.7 shows the Housing Visual Zone with symbols identifying the most significant visual elements located in it.

5.9.3 Assets

Site Planning

Neighborhoods are conveniently located near schools, the community center and entry gates, but separated from mission-related training and administrative operations.

Large open spaces between family housing areas provides easily accessible recreation opportunities for play and relaxation (Fig. 5.48).

Fig. 5.48 – View of open space and trees at the northern end of the Housing Visual Zone.

Buildings

The new family housing areas are attractive and set the standard for housing at Hunter AAF (Figs. 5.49 and 5.50).

Fig. 5.49 – A typical new three-family house.

Fig. 5.50 – A typical new single-family house.

Circulation

Streets are adequate to accommodate normal traffic (Fig. 5.51).

Fig. 5.51 – New streets are wide and on-street parking is prohibited.

LEGEND:

- HOUSING VISUAL ZONE
- MAIN ENTRANCE
- PRIMARY ROAD
- SECONDARY ROAD
- FOCAL POINT / LANDMARK
- GOOD VIEWS

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HOUSING VISUAL ZONE

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MAP 5.7

SOURCE: Directorate of Public Works, Office of Master Planning, Visual Districts Map 11/22/04

Plant Material

Many areas have mature trees that provide shade and enhance the appearance of the neighborhood (Fig. 5.52).

Fig. 5.52 – The stand of trees at the end of this street contribute to the comfortable appearance of the homes.

Site Elements

Fountains added to traffic circle parks contribute to the appearance of the neighborhoods (Fig. 5.53).

Fig. 5.53 – A fountain is the focus of this traffic circle park.

Antiterrorism

The housing areas are within the controlled installation perimeter.

5.9.4 Liabilities

Site Planning

The repetition of identical structures on straight narrow streets projects a regimented and monotonous visual image (Fig. 5.54).

Fig. 5.54 – These homes with shallow front yards and narrow side yards are uninviting.

The street that parallels the installation perimeter has an unattractive noise wall opposite the residential units (Fig. 5.55).

Fig. 5.55 – In addition to being unattractive, the soundwall reflects neighborhood street noise toward the homes.

Buildings

Duplex units lack entry identity, architectural detailing, color, interest and individuality (Fig. 5.56).

Carports and their associated vehicle parking areas diminish the appearance of the neighborhoods because of their consistent location in the front of dwellings (Fig 5.56).

In the absence of indoor storage, the use of carports for storage of personal items results in visual clutter along streets.

Fig. 5.56 – Front view of one side of a duplex.

Circulation

Most streets are through streets that encourage speeding and increase uninvited traffic.

Fig. 5.57 – On most streets, very few street trees or shrubs survive.

Plant Material

Native vegetation has not been adequately supplemented with additional trees and smaller plantings in order to define roadways, highlighting building entries and create outdoor spaces (Fig. 5.57).

Site Elements

Damaged and deteriorated site elements detract from the appearance of the neighborhoods (Fig. 5.58).

Fig. 5.58 – Drainage channels that contain standing water and have steep walls are difficult to mow.

Antiterrorism

No liabilities noted.

5.9.5 Recommendations

Site Planning

Add landscaping and architectural detail to increase variety in the way repetitious series of residential units appear from the street.

Surface the soundwall with an attractive material, such as brick, tile, or stucco.

Buildings

Add trim and paint to the facades of units that have indistinctive appearance and obscure entries.

During renovations and in new housing provide enclosed garages and place carports and driveway parking between units rather than in front.

Circulation

Install traffic calming devices along streets where motorists frequently speed.

Plant Material

Add landscaped areas at neighborhood entrances, along the pedestrian system, at recreation areas and between lots to better define open spaces and to enrich the overall appearance of the housing areas.

Site Elements

Install new signs, fencing and lighting as they become deteriorated. Select elements that are compatible in design and appearance so the new elements are compatible with the older buildings or newer styles after renovation.

Antiterrorism

No recommendations.

5.10 GREEN SPACE VISUAL ZONE

5.10.1 Visual Character

The Green Space Visual Zone includes recreation facilities, buffer areas and natural forests and wetlands. The abundance of green area is one of the primary influences on the overall positive visual image of Hunter AAF. This valuable resource extends along the perimeter and into the developed areas as open spaces and recreation areas.

The wetland marsh area covers the southwest part of the installation and provides natural habitat for wildlife, recreation

opportunities and attractive views. The golf course along the southeast perimeter provides an important green area adjacent to the dense suburban development surrounding this part of the installation. The wooded area, within which the golf course has been developed, provides a very positive visual setting. Green areas along the east and north perimeters of the installation provide an effective buffer and screen.

The master plan for Hunter AAF proposes a major green area corridor between the northwest industrial and the Barracks and Town Center visual zones. Most buildings in this area have been removed but street and utility systems in this former encampment area remain. Lincoln Cemetery, located in the center of the cantonment area, is poorly maintained open space, but is not under the control of the installation. The undeveloped land between the two northern housing areas provides a valuable green area resource.

5.10.2 Visual Analysis Map

Map 5.8 shows the Green Space Visual Zone with symbols identifying the most significant visual elements located in it.

5.10.3 Assets

Site Planning

Green areas help establish the positive visual image of Hunter AAF. A variety of green area types have been preserved and well managed in this highly developed suburban setting. The location and visibility of much of the green areas are also assets for the surrounding community (Fig. 5.59).

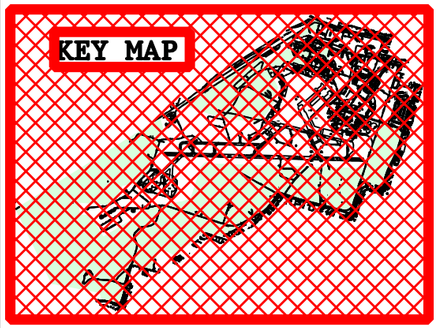
Fig. 5.59 – The golf course is a green area asset for military and civilian personnel.

Buildings

There are no buildings actually located in the Green Space Visual Zone, but portions of the Installation Support Visual Zone near the runways contain buildings that are visible across the mowed fields. These buildings stand out dramatically in contrast to the expansive surroundings (Fig. 5.60).

Fig. 5.60 – Saber Hall is visible across the airfield, to the left in this view from South Perimeter Road.

KEY MAP



LEGEND:

- GREEN SPACE
- VISUAL ZONE
- FOCAL POINT / LANDMARK

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GREEN SPACE VISUAL ZONE

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MAP 5.8

SOURCE: Directorate of Public WOrks, Office of Master Planning, Visual Districts map 11/22/04

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Circulation

The installation Perimeter Road loops around the airfield and provides access to all of the Green Space Visual Zone (Fig. 5.60).

Plant Material

A wide variety of natural forest and wetlands vegetation thrive within this visual zone (Fig. 5.61). Also, the fields around the runways encompass thousands of acres of mowed grass.

Fig. 5.61– Wetlands at the west end of the runway occupy low areas between wooded uplands.

Site Elements

There are few elements in this visual zone other than a few recreational shelters, athletic courts, signs and overhead utility lines (Fig. 6.52).

Force Protection

No assets noted.

Fig. 5.62– The baseball complex is one of just a few developed areas in the Green Spaces Visual Zone.

5.10.4 Liabilities

Site Planning

The lake is only minimally developed for recreation (Fig. 5.63).

Fig. 5.63– Courts and shelters near the lake are the only recreation features related to it.

Buildings

No liabilities noted.

Circulation

There are few developed recreation facilities, such as trails or bike paths, within the Green Space Visual Zone.

Plant Material

Play areas lack the landscaping to make these facilities more pleasant to use (Fig. 5.64).

Fig. 5.64– There is no organized landscaping at the lake picnic area to enhance it.

Site Elements

Seating, lighting and other amenities are generally limited in green areas (Fig. 5.65).

Force Protection

No liabilities noted.

Fig. 5.65– More activity could be encouraged in this large green area through the addition of site furniture.

5.10.5 Recommendations

Site Planning

Expand use opportunities at the lake with a walkway or boardwalk along its edge, an observation platform, a wading area, a snack concession stand, etc.

Buildings

Design new features in recreation areas to be coordinated in color and materials so excessive variety does not detract from the natural character of the site.

Circulation

Add trails and bikeways that allow access to more areas of the Green Space Visual Zone.

Plant Material

Add landscaping to play areas to increase visual interest and comfort for adult visitors.

Site Elements

Add comfortable seating and drinking fountains to the play areas, recreation facilities near the lake and athletic courts.

Force Protection

Continue to provide standoff and security measures as appropriate for recreation assets.

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SECTION 6
IMPROVEMENT PROJECTS

6.1 INTRODUCTION

6.1.1 Section 6 consists of projects generated from the recommendations presented in the visual zone analysis section starting at Section 5.4. The projects may consist of enhancement of a single visual element or improvement of an area that includes a variety of visual elements. Depending on the project scope and cost, the projects could include: Military construction (MILCON), Nonappropriated-funded (NAF), Other Procurement, Army (OPA) and maintenance and repair, local minor construction, and self-help. Each improvement project is described and cost-estimated in enough detail to place each project within the appropriate project list or annual work plan, in an appropriate Fiscal Year, within the statutorily correct funding program. Projects require a Capital Investment Strategy.

6.1.2 The paragraphs below discuss each project at length and includes existing conditions, project description, design concept, cost estimate, primary and alternate recommended funding sources, photographs, sketches and maintenance impact as applicable.

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SECTION 7
SITE PLANNING DESIGN STANDARDS

7.1 INTRODUCTION

7.1.1 Site Planning is the process of arranging an external physical environment in complete detail to include the structures, circulation patterns and other elements that form the built environment. The site planning and design process is used to develop a project that fulfills facility requirements and creates the optimal relationship with the natural site. See Unified Facilities Criteria (UFC) 3-210-06A, Design: Site Planning and Design for detailed guidance on site planning to include program analysis, site analysis, site verification and concept development. This technical manual also discusses site design guidelines, describes the steps in the site planning process and contains examples of various sketches/diagrams developed in support of these steps. Also see TI 800-01, *Design Criteria, Chp. 3, Site Planning and Design Criteria*. Environmental documentation will be prepared prior to site selection to support the construction activity in accordance AR 200-2, *Environmental Effects of Army Actions*.

7.1.2 This section on site planning addresses the issues and criteria involved in the determination of how facilities are to be arranged on developed sites within the installation (Fig. 7.1). The installation master plan provides information that forms the foundation for site planning. The master plan is a mechanism for ensuring that individual projects are sited to meet overall installation requirements. AR 210-20, *Master Planning for Army Installations* provides additional information concerning the master plan.

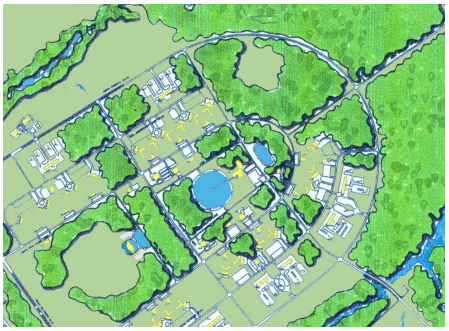

Fig. 7.1 – Site planning establishes the arrangement of facilities on a development site.

7.1.3 The other five design sections are dependent upon site planning to establish the basic relationships between buildings, buildings and supporting facilities, supporting facilities and roads, etc. Links to these other sections are provided below:

- Section 8 - Buildings Design Standards
- Section 9 - Circulation Design Standards
- Section 10 - Landscape Design Standards
- Section 11 - Site Elements Design Standards
- Section 12 - Antiterrorism Design Standards

7.2 SITE PLANNING OBJECTIVES

7.2.1 The goal of site planning for the installation is to produce attractive, sustainable development. Sustainability requires the built environment to be designed and constructed to preserve and enhance the natural environment. Manmade facilities are designed as a part of the environment and to minimize negative environmental impacts. General site planning techniques resulting in sustainable development are cost efficient because they conserve energy and reduce construction and maintenance cost. Typical site planning objectives include the following:

- Balance the multiple relationships that occur between a site and project requirements including function, use, traffic, utilities, existing structures soil suitability, land availability and development on surrounding sites.
- Preserve natural site features such as topography, hydrology, vegetation and tree cover.
- Locate facilities with consideration of climatic conditions such as wind, solar orientation and microclimate.
- Preserve the natural site by molding development to fill around existing land forms and features. This development approach minimizes extensive earthwork, preserves existing drainage patterns and preserves existing vegetation.
- Plan for facilities to be clustered to preserve land and reduce construction cost. Clustering should occur on the flattest land areas. Minimize the lengths of roads and utility lines needed to serve the development. Room for expansion should be provided for both buildings and parking areas.

- Cluster barracks in a grid pattern to present an ordered setting. Barracks complexes should be designed with complete systems of sidewalks, trees, landscaping and other site features to provide a formal atmosphere.
- Organize company operations facilities formally in a "dress-right-dress" layout to present an image of precision and order, to reflect the nature of the installation.
- Consider antiterrorism measures carefully in the organization and layout of facilities.
- Incorporate appropriate stormwater management measures into each project to adequately control post-development runoff. All measures shall be in accordance with the requirements of the Environmental Protection Division (GA EPD) of the Georgia Department of Natural Resources. Where stormwater retention/detention is required, designers should limit their designs to include dry detention basins only. A dry detention basin is a surface storage basin or facility designed to provide water quantity control through detention and/or extended detention of stormwater runoff (Fig. 7.2).

Fig. 7.2 - View of a Dry Detention Basin consistent with Section 3.4, GA Stormwater Management Manual

- Consider the use of underground detention in underground vaults or tanks designed to provide water quantity control. As stated in Section 3.4 of the Georgia Stormwater Management Manual "Detention vaults are box-shaped underground stormwater storage facilities typically constructed with reinforced concrete. Detention tanks are underground storage facilities typically constructed with large diameter plastic pipe (Fig. 7.3). Both serve as an alternative to surface dry detention for stormwater quantity control, particularly for space-limited areas where there is not adequate land for a dry detention basin or multi-purpose detention area."
    - Underground detention vaults and tanks are not intended for water quality treatment and must be used in a treatment train approach with other structural controls. This will prevent the underground vault or tank from becoming clogged with trash or sediment and significantly reduces the maintenance requirements for an underground detention system.
    - Prefabricated concrete vaults are available from commercial vendors. In addition, several pipe manufacturers have developed packaged detention systems.

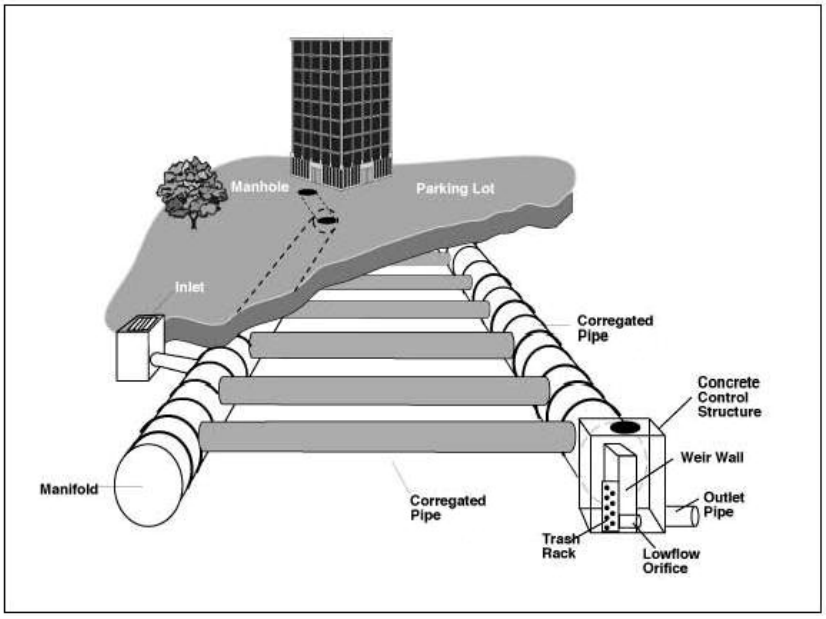

Fig. 7.3 - Diagram of an underground detention tank system adapted from Section 3.4, Georgia Stormwater Management Manual.

7.3 SITE PLANNING CONSIDERATIONS

7.3.1 The fit of new facilities to their environment is developed by a thorough site analysis followed by careful site planning. The primary issues that determine the basic location and organization of buildings and facilities on a site are identified and evaluated during the site planning. The results of evaluation are commonly displayed on a map that depicts the opportunities and constraints for the proposed development (Fig. 7.4).

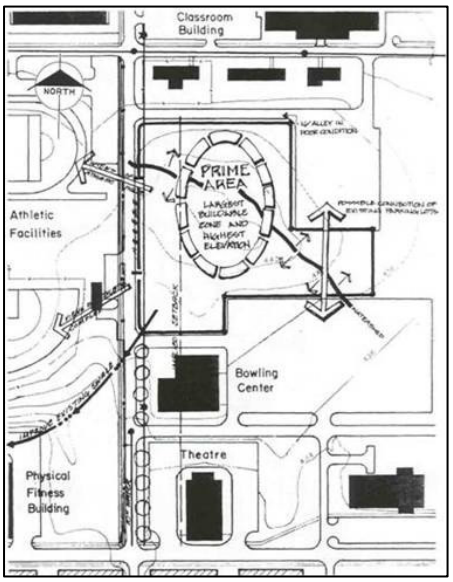

Fig. 7.4 – Sample map of site opportunities and constraints.

7.3.2 Any building or facility used only by able-bodied personnel need not be accessible to the disabled. Nevertheless, when feasible and appropriate, seek to incorporate accessibility measures into the design since the facility use may change over time (the military exclusion is provided by UFAS 4.1.4 (2)). All other structures or facilities must meet the standards of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS), with the most stringent standards applied in the event of conflicting guidelines. (See AR 420-70, Chapter 2, Para 2.8). This includes the use of curb cuts, ramps, handrails and grade-level entrances to avoid site barriers. Provide designated handicapped parking spaces in all

major parking lots and drop-off zones for persons with mobility impairments. Modify existing structures for handicapped accessibility whenever possible, especially community facilities that are most likely to be used by families, veterans or visitors.

7.3.3 Environmental issues to consider in the preparation of a site plan include any action or proposal that has a detrimental affect on land, water, air, cultural and biological resources. The location of facilities on land that results in minimal disturbance to the existing topography, vegetation and drainage patterns greatly reduces negative impact on the environment. It is the Garrison Commander's responsibility to ensure that all National Environmental Policy Act (NEPA) documentation is started before the site selection process, as this process feeds the 1391 process.

NEPA Process

NEPA requires that an Environmental Impact Statement (EIS) be submitted to the U.S. Environmental Protection Agency (EPA) for major projects that may result in significant effect to the environment. The EPA reviews and responds to filed impact statements. Information pertaining to EISs and their submission can be found at the following EPA websites:

- Environmental Impact Statement (EIS)
- Submitting Environmental Impact Statements (EISs)

Rivers and Harbors Act Review

Federal law requires that prior to the undertaking of activities which affect the nation's waterways a permit must be acquired. In the law, waterways are described as "navigable waters of the United States" and "waters of the United States." The law includes wetlands in these designations. Information regarding statutory, administrative and judicial matters, including general regulatory policy, definitions of "waters of the United States" and "navigable waters" and processing of permits can be obtained at the following Corps of Engineers website:

- Statutory, Administrative, and Judicial Materials

Impact Mitigation

Include procedures for mitigating environmental concerns in the early stages of project development. To the maximum extent possible, avoid siting development or individual buildings in environmentally sensitive areas. The installation master plan environmental overlay should be reviewed prior to the development for areas designated as habitat for threatened or endangered species.

7.4 SITE PLANNING DESIGN CRITERIA

7.4.1 The site planning component of installation design comes first in the design process and determines the general location of the other components. Consequently, site planning must consider the criteria for architectural design, circulation, landscape architecture, site elements and antiterrorism measures. Site planning criteria is divided into two categories, natural conditions and manmade conditions. Each is discussed separately in the following paragraphs. These criteria are to be utilized for the assessment of the visual and spatial impacts of site planning.

7.5 NATURAL CONDITIONS

7.5.1 The natural terrain is a major determinant of the layout and form of the installation. The following guidelines should be used to maintain the natural topography of the installation.

- Maintain natural ground slopes and elevations.
- Align roadways and buildings along topographic lines.
- Locate facilities that have expansive ground coverage on relatively flat terrain.
- Use moderately sloping areas for buildings with less ground coverage area.
- Avoid development in natural drainage ways and floodplains.
- Provide a reasonable balance of cut and fill. Earthwork calculations should take into account the various adjustments required to achieve a reasonable balance (approximately 5% to 10% excess suitable material after adjustments).
- Adjust earthwork calculations to account for:
  - Topsoil stripping and reuse
  - Pavement and subgrade excavation
  - Root mat removal
  - Compaction
  - Related earthwork items

7.5.2 The site planning team will consider the following hydrologic concerns for natural drainage corridors, floodplains and waterways during the site planning process. The issues to be considered include, but are not limited to the following:

- Preserve and maintain natural drainage areas and floodplains.

- Limit development in floodplains to open spaces and recreational uses.
- Preserve rivers, lakes, streams or other waterways, and incorporate them into the design layout.
- Incorporate a 25-foot stream buffer in accordance with the Georgia EPD requirements for State Waters (Fig. 7.5). The need for stream buffers is be determined on a case-by-case basis.

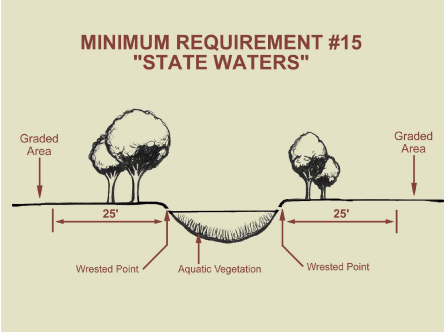

Fig. 7.5 – State Waters Stream Buffer diagram from the GA EPD.

7.5.3 New and redeveloped facilities will be designed in response to local climatic conditions to provide a more comfortable environment and reduce the demands for heating and cooling (Fig. 7.6).

Temperate Regions
Building design and site development will be designed to balance the effects of seasonal thermal variations. Winter warming and summer cooling must be maximized by building orientation to sun angles and prevailing winds.

Hot Humid Regions
Building design and site development should be developed to minimize solar heat gain and promote air movement and cross ventilation.

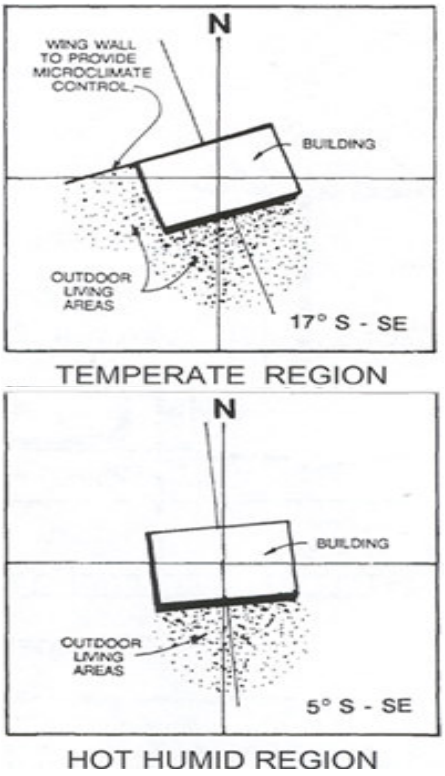

Fig. 7.6 - Building orientations for passive solar heating at Hunter AAF would be for the temperate or hot humid region.

7.5.4 New development will be designed to preserve and enhance scenic and other attractive views and vistas, and to screen unattractive views and vistas. Visual extensions through open spaces should be incorporated as much as practicable to provide a sense of orientation, relief and enjoyment.

7.5.5 New development and additions will be designed to protect and preserve existing native vegetation. This preservation reduces maintenance and enhances sustainability. The preferred plant are listed in Appendix O, Plant Palette. Also, see Section 10 – Landscape Design Standards.

7.6 MANMADE SITE CONDITIONS

7.6.1 The site plan provides the locations of the manmade development that will occur on site. It establishes the spatial relationships as well as the relationships between manmade and existing natural features. Manmade site conditions include all development on the installation to include buildings, roadways, parking lots, walkways, walls, fences, utilities and other facilities.

Buildings, roadways, parking lots and above ground utilities are the primary manmade visual determinants.

7.6.2 The following site planning guidelines will be used in the visual and spatial review of the installation:

- Cluster buildings to reduce impact on the natural environment and reduce roadways and utility corridors needed to serve the development, at the same time, however, giving full consideration to antiterrorism requirements.
- Locate large buildings in relatively flat areas oriented to the existing topography to reduce the cut and fill and preserve the natural vegetation and drainage (Fig. 7.7).
- Minimize solar heat gain for cooling and maximize solar heat gain and retention for heating.
- Site buildings with consideration for the microclimate conditions of the site that result in variances in wind or light because of adjacent land forms, structures, or trees.
- Orient outdoor pedestrian areas to provide the most comfortable exposure.
- Utilize lighter colored building surfaces exposed to the sun and darker colors on recessed surfaces to absorb radiation.
- Orient windows according to impact of climatic conditions.
- Locate development on the leeward side of hills.
- Design and locate roads to provide a hierarchy of traffic carrying capacities.
- Locate roads to blend with topography and vegetation.
- Design and locate parking lots to minimize the visual impact of broad expanses of pavement and vehicles. These types of parking areas are visually and climatically undesirable, and should be reduced when possible by preserving existing vegetation and by enhancing with new plantings in the medians.
- Allow adequate space for future expansion of parking lots where large concentrations of soldiers will be located.
- Design and locate pedestrian walkways and bicycle paths to fit the physical environment and to provide a comfortable pedestrian experience, limiting conflicts with vehicular traffic.
- Locate trees and shrubs to buffer harsh natural conditions such as in parking lots and large paved areas. Hedges and

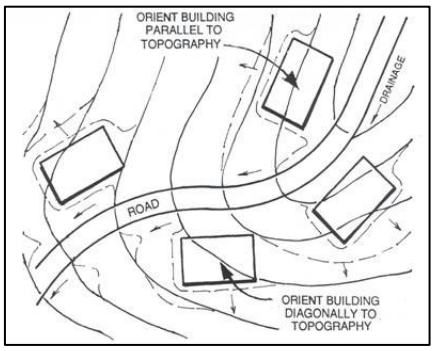

Fig. 7.7 - Orient buildings and roads to topography to minimize earthwork.

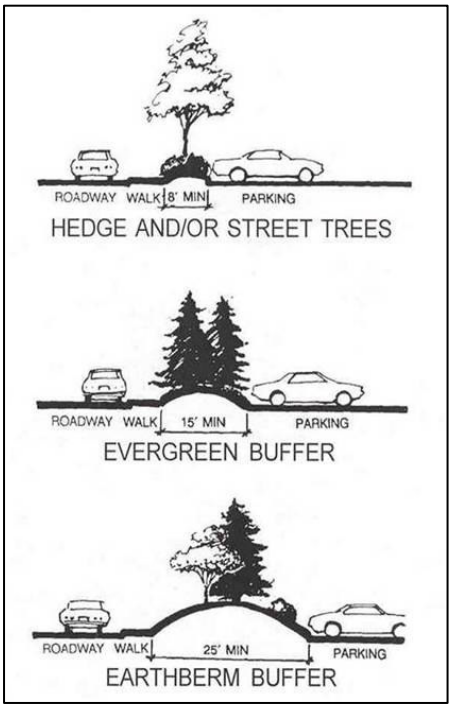

Fig. 7.8 – Vegetation is preferred for parking lot screening; low berms may be approved on a case-by-case basis.

street trees, evergreen buffers and earthen berms are useful in creating these buffers (Fig. 7.8)

- Utilize deciduous material to provide for sun in the winter and shade in the summer. Utilize evergreen material to provide windbreaks for cold north winds.
- Design and locate site elements to blend with and enhance the physical environment.
- Design and locate required antiterrorism measures to blend with the physical environment.

7.7 ARMY STANDARDS

7.7.1 The cited Army Standards shall be met.

- Unified Facilities Criteria (UFC) *3-210-06FA*, Design: Site Planning and Design
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)

7.8 REFERENCES

7.8.1 The following references are provided for guidance.

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 7
- Unified Facilities Criteria (UFC) *3-400-01*, Design: Energy Conservation
- Unified Facilities Criteria (UFC) 3-210-01A, Design: Area Planning, Site Planning, and Design
- Unified Facilities Criteria (UFC) *3-230-15FA*, Design: Subsurface Drainage Facilities for Airfields and Heliports
- Unified Facilities Criteria (UFC) *3-230-16FA*, Design: Drainage and Erosion Control Structures for Airfields and Heliports
- Unified Facilities Criteria (UFC) *3-230-17FA* , Design: Drainage for Areas Other than Airfields

- Unified Facilities Criteria (UFC) 3-250-18FA, Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
- Unified Facilities Criteria (UFC) *3-260-02,* Design: Pavement Design for Airfields
- Unified Facilities Criteria (UFC) *3-250-01FA,* Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Technical Instructions (TI) 800-01*, Design Criteria*
- Technical Instructions (TI) 801-02, *Family Housing*
- Master Planning Instructions (MPI)
- Whole Building Design
- Environmental Protection Division, Georgia DNR

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SECTION 8
BUILDINGS DESIGN STANDARDS

8.1 INTRODUCTION

8.1.1 Hunter AAF has a long history and has undergone considerable change since its establishment as a military air base at the start of World War II (WWII). Hunter AAF was initially used as a municipal airfield serving commercial airlines. With the start of WWII, Hunter AAF became the first of 24 civilian airfields to be converted to military airfields. At the conclusion of WWII, Hunter was returned to civilian use. Around 1950 and the beginning of the Cold War, it was again converted to military base.

Fig. 8.1 – The Physical Fitness Center exhibits several of the design characteristics of the Southern Living Station of Choice.

8.1.2 Hunter AAF is currently implementing an architectural design theme called "Southern Living Station of Choice," implying that the installation has all the amenities that would cause a military service member to request being stationed at Hunter AAF. The architectural characteristics of this theme are reminiscent of the Southern Colonial Revival style. It incorporates specific architectural features such as porticos, verandas, columns, low-pitched hip or gable roofs and regular patterns of fenestration (Fig. 8.1 and 8.2). Building materials such as brick, concrete masonry units, metal siding and stucco are used and the range of colors is limited to emphasize earth tones and white. When properly combined, these elements create an architectural image which expresses continuity with Georgia architectural traditions.

Fig. 8.2 – The entry at Tuttle Army Health Clinic includes round columns.

Hunter AAF has an overall image that includes new and old construction, with like features and building materials, as well as unlike features. Barracks are all similar to each other and most other buildings in scale and materials. Hangars are similar to each other in scale and materials, but vastly different from most other

buildings on the installation. Most new buildings strongly relate to each other by featuring the Southern Living Station of Choice design characteristics. These buildings also include the creation of courtyards and views across open space to improve the quality of life on the installation.

8.1.3 Design Components

Hunter AAF requires certain design components that are reminiscent of a southern Colonial Revival architectural style. Specific design components include:

- Porticos
- Verandas
- Columns or square pillars
- Low-pitched roofs
- Regular fenestration (Fig. 8.3).

Fig. 8.3 – Bldg. 1531 exhibits several of the design components characteristic of the architecture on Hunter AAF.

Additionally, combining building materials such as brick, concrete masonry units, and metal siding is also required for the exteriors of all new buildings.

Design aesthetics for new buildings are related to the building type and the visual district in which it is to be sited. Section 5, Visual Themes and Zones describes the specific visual zones that have been identified at Hunter AAF. Each visual zone has a limited selection of materials and colors that may be used and it is generally expected that architectural features will be used to create a feeling of human scale (Fig. 8.4).

Fig. 8.4 – Small-sized windows, recessed entries and a varying roofline emphasize the human scale of this brigade headquarters (Bldg. 1525).

8.1.4 Visual Analysis

Architects undertaking projects at Hunter AAF are expected to analyze the setting into which the new structure is to be placed and to adapt their design to reinforce the visual assets that relate to it. The visual analysis includes consideration of the appropriate use of construction materials, the placement of entrances, the use of outdoor space and efficiency of maintenance (Fig. 8.5).

Fig. 8.5 –The 160 Special Ops TEMF (Bldg. 8657) features the primary building materials and colors of the Installation Support Visual Zone.

Exterior building materials to be used varies somewhat between the visual zones, as do the colors of walls, roofs, doors and windows. Typically, primary entrances for buildings are dominant features, commonly flanked with columns supporting a portico with a pitched roof (Fig. 8.6).

Additions to buildings are not common, but they must be visually compatible with the existing building. Compatibility is achieved by skillfully proportioning the addition and relating the exterior materials and details to the facades of the existing building.

The need for outdoor spaces varies between building types, but courtyards and green areas are to be integrated with the building design using walls, paving and landscaping.

8.2 BUILDING OBJECTIVES

8.2.1 Sustainable Design

Sustainable design reduces construction and maintenance costs and conserves energy through proper construction and materials selection. The following is a list of sustainable design objectives as stated by the Department of the Army:

- Reduce the consumption of energy, land, materials, water, and other non-renewable resources;
- Minimize the waste of energy, land, materials, water, and other limited resources;
- Protect the natural environment that is the source of all resources; and
- Create livable, healthy, and fiscally productive manmade environments for existing and future generations.

Fig. 8.6 – Portico entrance with masonry columns at a dining facility (Building 110).

These objectives, along with sustainable design principles, are found in Appendix D, Sustainable Design. Hunter AAF requires the practice of sustainable design in the development of new facilities.

Fig. 8.7 – The Garrison Headquarters was sited to preserve these live oaks.

8.2.2 Building Design Objectives

Building design objectives for Hunter AAF incorporate architectural design elements compatible with the Southern Living Station of Choice theme. Additional objectives include:

- Accommodate natural site conditions (Fig. 8.7);
- Use sustainable construction materials and practices;
- Design facades with regular patterns of fenestration;
- Adapt buildings to natural site conditions;
- Preserve land by reusing former building sites when possible; and
- Maximize architectural compatibility between new and existing facilities.

8.3 STRUCTURAL CHARACTER

8.3.1 Structural Character of Hunter AAF

The character of an installation's architecture varies according to the use of a building or structure and the period in which it was

built. Use and age variations can result in incompatibilities between different architectural character. Hunter AAF has had two major building periods in its history and is currently in the middle of another. The styles and materials vary throughout the cantonment area, but there is an overall consistency in the low-scale nature of the buildings on the post.

The first major building period at Hunter AAF was between 1940 and 1943, when hundreds of buildings were constructed to convert the municipal airport into a military airfield for World War II. Buildings and structures were erected in two areas of the airfield. In the North Cantonment area, which was north of present-day North Lightning Road, two metal hangars, a metal water tower, administration buildings, ammunition bunkers, warehouses, TEMFs, a hospital and hospital wards, barracks, mess halls, and recreation buildings were built. The majority of these temporary buildings were wood, but some were concrete block or terra cotta tile (Fig. 8.8). The wood buildings were painted cream and had green asphalt shingle roofs. In the East Cantonment area, which was east of present-day South Lightning Road, a control tower, ordnance storage facilities, administration buildings, a mess hall, and more barracks and hospital wards were built (Fig. 8.9). These buildings were painted camouflage colors of sand and drab green.

The other major period of construction at Hunter AAF was between 1951 and 1961, when the airfield was a Strategic Air Command (SAC) base of the U.S. Army Air Forces and was responsible for strategic bombing and atomic bomb deployment. Mission-related facilities for the SAC program were built, including hangars, nosedocks, squadron operations buildings, a munitions storage area, fuel storage facilities, a nuclear weapon testing center, and the Saber Hall complex. More barracks (including pinwheel barracks), family housing, a chapel, and recreational facilities were also constructed during this period. The hangars and nosedocks were of steel construction (Fig. 8.10). The operations buildings, chapel, and recreational facilities were built of wood or concrete block and had flat or low-pitched gable roofs and metal windows (Fig. 8.11).

Although some new maintenance buildings, TEMFs, administration buildings, and storage buildings were built in the late 1970s and in the 1980s, Hunter AAF did not experience a major building program after 1961 until recently. A number of new buildings are planned, in the process of construction, or are already completed, including the Departure/Arrival Airfield Control Group (DAACG) Operations Facility (Bldg. 7920), the Tuttle Army Health Clinic (Bldg. 1440), hangars, a Community and Family Readiness Center, Ranger Battalion headquarters,

Fig. 8.8 – World War II-era wood-frame warehouse (Bldg. 702) and metal water tower (Bldg. 721).

Fig. 8.9 – A World War II-era wood-frame administration building (Bldg. 1209).

Fig. 8.10 – Three steel hangars (Bldgs. 1130–1132) built in 1958 for the SAC program.

Fig. 8.11 – The airfield operations facility was built in 1957 (Bldg. 1252).

barracks, and a physical fitness center. They are brick or brick and stucco or metal with metal low-pitched hip or gable roofs and simple architectural detailing (Fig. 8.12).

8.3.2 Consistencies in Structural Character

Regardless of use or period of construction, the majority of Hunter AAF buildings and structures share a number of attributes. The following architectural features are present in older and newer facilities:

- Low-pitched hip or gable roofs
- One- to three-story building heights
- Rectangular plan
- Metal exteriors (Installation Support buildings)
- Red metal or asphalt shingle (on older buildings) roofs

Fig. 8.12 – A typical new barracks (Bldg. 313).

8.3.3 Incompatibilities in Structural Character

Hunter AAF contains several buildings that vary considerably from the overall structural character of the post. These buildings are products of the time period in which they were built, exhibiting the features and materials of the popular architectural styles. The respective designers may also have influenced the style and character of the buildings. The following facilities differ from the overall structural character of Hunter AAF:

- Army Community Service (Bldg. 1286)
- Generator Facility (Bldg. 1323)
- Hunter Club Annex (Bldg. 128) (Fig. 8.13)
- Hunter Lanes (Bldg. 1280)
- Pinwheel Barracks (Bldg. 1277) (Fig. 8.14)
- UH-60 Flight Simulator Facility (Bldg. 1292)

Fig. 8.13 – Front of the Hunter Club Annex (Bldg. 128).

Fig. 8.14 – A pinwheel-style barracks as remodeled in the late 1970s (Bldg. 1277).

8.3.4 Design Techniques for Consistent Structural Character

Hunter AAF is making every effort to be consistent throughout the various visual zones within the cantonment area by applying the design preferences encompassed in the Southern Living Station of Choice theme. The coordination of structural character on an installation provides a consistent and coherent 'sense of order' and 'sense of place.' This relationship of design comes from using compatible scales, massing, form, color, texture, materials, and fenestration. These design techniques are explained below:

Scale

Scale refers to the size of a building façade in relation to humans. Buildings with predominant vertical façades, which dwarf the

individual, are defined as monumental in scale. Buildings with more horizontal façades designed to relate to the size of the human figure are defined as human scale. Most buildings on installations should be human scale rather than monumental. Monumental architectural design is typically utilized for more prominent and ceremonial buildings, such as worship centers, headquarters complexes, and hotel facilities. These types of buildings make use of large, glazed areas at entrances and oversized fenestration elements to create a scale appropriate to the building's use and presence. The post chapel's floor to ceiling height window bay on the prominent face of the building is an example of monumental scale (Fig. 8.15). Hunter AAF's hangars are large in scale as a result of their function (Fig 8.16).

Fig. 8.15 – The oversized fenestration of the Post Chapel (Bldg. 145) contributes to its monumental scale.

All new construction on Hunter AAF should be compatible in scale with adjacent buildings. Relief should be provided through roof form, fenestration, building projections, and landscape plantings. Human-scaled buildings on Hunter AAF will be achieved by limiting the height of buildings to no more than three stories, terminating buildings with low-pitched (between 3:12 and 5:12 pitch) hipped or gabled roofs with dormers or gablets, and designing buildings with regular fenestration patterns. The DAACG (Bldg. 7920) is an example of a large-sized building designed to appear human in scale (Fig. 8.17).

Fig. 8.16 – A 1943 hangar (Bldg. 1290) and a 1936 hangar (Bldg. 1206)

Fig. 8.17 – Its low-pitched roof, portico entrance, and small-sized openings add to the human-scaled design of the DAACG (Bldg. 7920).

Massing

Massing refers to the overall bulk or volume of a building. The size and proportion of individual buildings should be designed to be proportionally compatible with adjacent buildings (Fig 8.18). The massing of the majority of buildings and structures on Hunter AAF is broken up by complex roof configurations, gabled entrance porticos, projecting bays, or alternating window and wall bays.

Form

The form of a building is determined by its size, mass, shape, and proportions. The use of similar building forms provides continuity to the installation architecture. The result is a more aesthetically pleasing environment. Rectangular building forms are repeated throughout Hunter AAF.

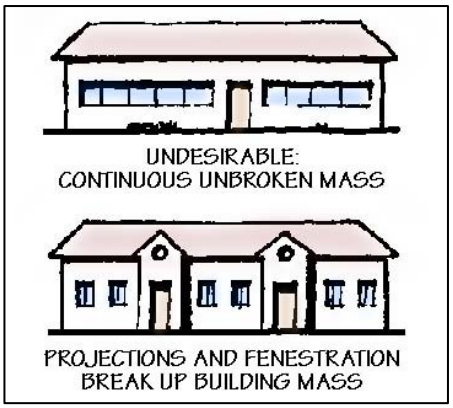

Fig. 8.18 – Illustrations showing options in building massing and fenestration.

Color

The use of a color scheme that is consistent throughout the installation results in a continuity of buildings and contributes to a sense of place. However, color schemes throughout the installation often vary according to the visual zone and visual theme in which the structure is located. Hunter AAF has defined color schemes for each visual zone in the cantonment area (see Section 8.14). Red is the dominant color used throughout the

cantonment area. Newer buildings are red brick and have red metal roofs (Fig. 8.19). Many older buildings have been painted with red doors and trim and have (replacement) red asphalt shingle or metal roofs (Fig. 8.20). New construction on Hunter AAF should adhere to the defined color schemes.

Fig. 8.19 – Front view of Bldg. 312 showing the prominence of red colors.

Texture

The use of materials of similar texture in buildings helps to provide visual continuity for the installation. The extensive use of brick and metal (for siding and roof cladding) on buildings on Hunter AAF contributes to the visual continuity of the post's architecture.

Materials

The use of the same materials in the exterior finish and trim of buildings helps provide visual continuity. Hunter AAF has identified the primary and secondary building materials for walls, wall openings, and roofs for each visual zone (see Section 8.14). The use of two wall materials is a common feature of buildings on Hunter AAF. For instance, Barracks and Town Center buildings typically have brick on the lower half to two-thirds of the exterior walls and stucco above (Fig. 8.21). Many Installation Support buildings have some type of masonry unit (brick or concrete block) on the bottom and metal siding above (Fig. 8.22). Designs for new buildings or structures on Hunter AAF should use the materials listed in Appendix K.

Fig. 8.20 – View of the red roof, doors and trim of the Fire and Emergency Services (Bldg. 1295), built in 1952.

Fenestration

Fenestration is the design and arrangement of windows in the walls of a building. Windows should be similar in design, size, and proportion for architectural compatibility and visual consistency. A simple fenestration pattern and avoidance of continuous bands of windows across entire facades are two of the design preferences for buildings on Hunter AAF.

Fig. 8.21 – A dining facility (Bldg. 110) with red brick and stucco exterior.

8.4 BUILDING ENTRANCES

Hunter AAF has emphasized prominent building entrances for new construction. This design emphasis creates a definitive sense of entry, regardless of the size or importance of the building. Evidence of this can be seen at both the dining facility (Fig. 8.23) and the new Ranger Battalion headquarters (Fig. 8.24). This trend should continue.

Fig. 8.22 – An illustration of a new hangar with a brick and sheet metal exterior.

8.4.1 Building Entrance Design

Building entrances are designed to conform to the following guidelines:

- The entrance to a building should be in a prominent location and should be oriented toward the primary

adjacent public spaces, such as a courtyard, lawn, parking lot, or street.

- The preferred configuration of a primary entrance for a building is a projecting front-gabled or hipped portico supported by posts with brick bases (Fig. 8.23). Variations of this type of entrance can include a small gabled portico or gabled hood over the entry (Fig. 8.24). An entrance should not be barrel-vaulted.
- The details of an entrance should be designed to provide continuity with other entrances to the building and the entrances of adjacent buildings (Fig. 8.25).

Fig. 8.23 – Detail view of the primary entrance to the dining facility (Bldg. 110).

8.5 SERVICE AREAS

Service areas for loading docks, trash dumpsters, and mechanical systems should be screened from the views of primary use areas, such as entrances, courtyards, gathering areas, streets, and parking lots. Hunter AAF is concentrating on screening service areas around their battalion operations facilities, community support facilities, and barracks.

Fig. 8.24 – Environmental Branch offices (Bldg. 615) with simple front-gabled hood entrance.

8.5.1 Service Area Design

Service areas should be screened as an enclosure by using brick walls capped by metal or brick. The front of the enclosure should have a black metal gate. Screen walls should be between six and eight feet tall and should be in harmony with the adjacent building (Fig. 8.26).

8.5.2 Service Area Placement

Service areas should be placed at the rear or side of a building. Service areas must be sited in accordance with Antiterrorism requirements (UFC 4-010-01, Table B-1).

Fig. 8.25 – The Ranger Battalion Headquarters (under construction) has prominent entrances.

8.6 BUILDING ACCESSIBILITY

All structures or facilities, other than the exceptions mentioned below, must meet the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). The more stringent standards apply in the event of conflicting guidelines.

Fig. 8.26 – An example of a well-designed service area enclosure.

8.6.1 Exceptions to Building Accessibility

Any building or facility that is specifically restricted by occupancy classification for use by only able-bodied personnel during the expected useful life of the building or facility need not be accessible (military exclusion is provided by UFAS 4.1.4 [2]), but

accessibility is recommended since the intended use of the facility may change over time. Accessibility also is recommended to accommodate visitors, instructors, and contractors who may be present and need accessible facilities.

8.6.2 Handicap Access Design Guidelines

In addition to meeting ADAAG and UFAS guidelines, the following guidelines are also recommended in consideration of the structural character of Hunter AAF architecture:

- Where possible, place or install new ramps or lifts so as to not obscure character-defining architectural features of a building.
- Match protective hand and guard rails on ramps and lifts to existing exterior stair railings.

8.7 SEISMIC POLICY

Hunter AAF is in Seismic Zone 2A, a seismic hazard zone with a moderately low level of risk. The seismic design of buildings and other structures built on Hunter AAF will be in accordance with the design criteria set forth in TI 809-04, *Seismic Design for Buildings*.

The minimum performance objective for Army facilities is Substantial Life-Safety. To ensure compliance, seismic evaluations and mitigation of unacceptable seismic risks shall be performed. Higher levels of seismic protection for mission essential facilities will be considered in the evaluation.

8.7.1 Seismic Evaluation

Guidance for the seismic evaluation of existing facilities is given in TI 809-05, *Seismic Design Evaluation and Rehabilitation for Buildings*. Buildings will have a seismic evaluation performed when:

- A change in the building's use causes a change in the occupancy category, as defined in TI 809-04, *Seismic Design for Buildings*, to a category of greater importance (lower category number).
- A project is planned which causes the capacity of the structural system or components to be reduced to 90 percent or less of original stability and strength.
- A project will significantly extend the facility's useful life or will significantly increase the facility's value and the cost exceeds 50 percent of the current replacement value.

- A facility is damaged or is deemed to be an exceptionally high risk to occupants or to the public.

8.7.2 Exemptions to Seismic Evaluations

Existing facilities are exempt from seismic evaluation if:

- The original design was done according to the provisions of the 1982 or later edition of TM 5-809-10, or the 1988 or later edition of TM 5-809-1.
- Replacement is scheduled within 5 years.
- The facility is intended only for minimal human occupancy and occupied by persons for a total of less than 2 hours a day.
- The gross area is less than 3,000 square feet (275 square meters).

8.7.3 Mitigation of Unacceptable Seismic Risks

If the seismic evaluation determines that the facility does not meet Substantial Life-Safety or higher performance standards, as appropriate, unacceptable seismic risks will be mitigated. Rehabilitation will be performed in accordance with TI 809-05.

8.7.4 New Facilities or Additions or Extension of Existing Facilities

New facilities and additions or extension of existing facilities will be designed to provide the level of seismic protection required by TI 809-04.

8.8 HISTORIC ARCHITECTURE

The integrity of historic buildings or districts on the installation will be preserved and protected when practicable within the installation's primary mission of defense. The Army's management of historic properties is pursuant to the duties and responsibilities established by Congress under the National Historic Preservation Act (NHPA) of 1966, as amended. The NHPA also created theNational Register of Historic Places (NRHP) as the official listing of the nation's historic properties considered worthy of preservation. When working with historic properties the Army uses the following three categories:

- *Historic Buildings or Structures*. These are buildings or structures that are listed in or eligible for listing in the NRHP.
- *Historic Districts*. These are distinct concentrations of buildings, structures, sites or objects linked historically or

architecturally that are listed in or eligible for listing in the NHRP.

- *National Historic Landmarks*. These are buildings, structures, sites, objects, or districts listed in the NRHP and also designated as National Historic Landmarks in recognition of their national significance. National Historic Landmark designation is the highest recognition of a historic property.

8.8.1 Historic Properties on Hunter AAF

Hunter AAF has one historic district and one historic structure that are eligible for listing in the National Register of Historic Places; none are National Historic Landmarks.

- *Strategic Air Command (SAC) Operations Historic District*. This district consists of four discontinuous areas that are historically significant for their association with the U.S. Army Air Forces' SAC program, which was responsible for strategic bombing and atomic bomb deployment. The four discontinuous areas include:
  - *Flight Line Area.* This area contains two World War II-era hangars and an array of hangars, maintenance shops, and other aviation facilities from the Cold War era. The Flight Line area is located along the perimeter of the runways in the Installation Support Visual Zone (Fig. 8.27).
  - *Saber Hall.* This three-structure complex (Bldgs. 8661–8663) was built in 1960 for the SAC's ground alert program. Saber Hall is southwest of the runways in the Installation Support Visual Zone (Fig. 8.28).
  - *The Ammunition Supply Points (ASP) and 1300 Block Areas.* The ASP and 1300 Block areas are two munitions storage areas, one dating to 1952 and the other to 1957. Both ammunition areas were important to the mission of SAC. They are in the Installation Support Visual Zone.
- *Water Tower.* Hunter AAF's historic structure is a 1940 metal water tower (Bldg. 721) located in the Installation Support Visual Zone near Douglas Street and Cook Boulevard. Besides being the most visually prominent structure on the post, the water tower is an important example of non-standardized design during World War II (Fig. 8.29).

Fig. 8.27 – A 1940–41 hangar (Bldg. 813) in the Flight Line Area of the SAC Operations Historic District.

Fig. 8.28 – View of Bldg. 8661 of the Saber Hall complex, which was critical to the SAC ground alert program.

Fig. 8.29 – The historic metal water tower (Bldg. 721) built in 1940.

Selected individual buildings and structures within the Flight Line and Saber Hall areas no longer meet current mission requirements and are proposed for demolition or alterations that would remove character-defining features. In compliance with the NHPA, these actions are being mitigated. Any project that will potentially affect a historic property should be reviewed through the NHPA and the National Environmental Policy Act processes.

There are presently no other likely historic buildings, structures, or districts on Hunter AAF. The eligibility of individual buildings and structures should be examined as they turn fifty years old. The evaluation should use the NHPA implementing regulations, Protection of Historic Properties (36 CFR Part 800), and the guidance below.

8.8.2 Further Guidance on Historic Properties Management

For further guidance on managing historic properties use Army Regulation 200-4, *Cultural Resources Management* and Department of the Army Pamphlet 200-4, *Cultural Resources Management*. Specific requirements and recommendations for the treatment of historic properties are available in the National Park Service's *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. A working awareness of historic preservation policies and procedures followed by the Army Corp of Engineers can be found in the Technical Instruction (TI) 800-01, Design Criteria, Chap. 16, Preservation of Historic Structures.

8.8.3 Historic Preservation Guidelines

Appendix M, Historic Preservation Guidelines contains information on federal agency and Army regulations and guidelines on the management and treatment of historic properties, including appropriate design for new construction in the vicinity of historic properties or renovation/rehabilitation of historic buildings.

8.9 RENOVATIONS AND ADDITIONS

Renovations to buildings on Hunter AAF typically consist of changes to building interiors or replacement of roofs. Additions to existing buildings are not commonly undertaken. When existing buildings are renovated or additions are constructed, the architectural character of the renovation or addition should consider the materials, colors, and architectural elements within the design preferences of the Southern Living Station of Choice. For instance, any roof replacement is to comprise a metal low-pitched hip or gable roof; flat roofs are prohibited.

Building additions should also complement the scale, massing, form, materials, and fenestration of the existing structure (Fig. 8.30). However, a renovation or addition to a historical building should be designed to differentiate between what is historic and what is new.

Fig. 8.30 – An illustration comparing compatible and incompatible additions.

8.10 COURTYARDS AND GREEN AREAS

Courtyards can be located as part of the primary entrance to a building, or as an extension of non-primary entrance areas to the outside. Hunter AAF incorporates courtyards and green areas into its construction. The barracks areas and the Ranger Battalion headquarters each feature landscaped green areas (Fig 8.31). Green areas in the cantonment area also include the physical fitness fields, the golf course and the landscaped boulevards of Duncan Drive (Fig. 8.32), Billy Mitchell Boulevard, and Horace Emmet Wilson Boulevard.

Fig. 8.31 – Courtyards and green areas are included in the Ranger Battalion headquarters.

8.11 BUILDING MAINTENANCE

Buildings designed and constructed to incorporate sustainable design criteria should minimize life cycle, energy, and maintenance costs through proper selection of forms, materials, and construction details.

8.12 EXTERIOR BUILDING MATERIALS AND COLOR

8.12.1 Building Materials

Building materials make a major contribution to the scale, color, texture and character of a military installation. Hunter AAF personnel have created color palettes of durable, low maintenance materials, which encourage a variety of expression and provide a cohesive and consistent architectural character throughout the installation and within each visual zone. The materials reflect colors from a variety of earth tones. The color schemes identify the function of a building and its hierarchy within the installation.

Fig. 8.32 – Duncan Drive with its wide median is a noted green area.

8.12.2 Building Materials Guidelines

Use the following guidelines when selecting exterior building materials (Fig. 8.33):

- Choose materials for their longevity and maintenance characteristics.
- Use materials with integral colors - avoid painting exterior colors.

Fig. 8.33 – This barracks is an example of the use of materials pre-finished with integral colors.

- Use installation standard colors for exterior walls. Add accent colors sparingly. Accent colors can be used in recesses and to accent certain portions of a building's façade.
- Use pre-finished materials where possible - gutters, window frames, doorframes, etc.
- Use blended colors on pitched roofs.

8.12.3 Exterior Materials Charts

Appendix K, Exterior Materials Charts list the building materials and colors applicable to the following visual zones.

- Headquarters Visual Zone
- Town Center Visual Zone (Fig. 8.34)
- Barracks Visual Zone (Fig. 8.35)
- Installation Support Visual Zone
- Housing Visual Zone
- Green Space Visual Zone

The locations of these visual zones are found in Section 5, Visual Themes and Zones, of this Installation Design Guide.

Fig. 8.34 – Detail of the Physical Fitness Center that shows typical building materials and colors for the Town Center Visual Zone.

Fig. 8.35 – Detail of a barracks that shows the primary building materials and colors of the Barracks Visual Zone.

8.12.4 Exterior Building Color

Color is closely linked to the appropriate selection of exterior building materials and is a critical design element in relating adjacent buildings and creating a compatible visual environment within an installation. Hunter AAF personnel have prepared color charts for specific geographical areas giving consideration to climate, geography, culture, facility function, context, architectural character, etc. They have implemented color changes during normally scheduled maintenance cycles. The actual color chart found in Appendix L of the Army's Installation Design Standard was used as a guide in modifying Appendix K. Earth tones with white accents are identified for use in the Southeast region. See Appendix K for the manufacturer's color code material number for building colors to use.

8.13 KEY FACILITY TYPES STANDARDIZATION

The Assistant Chief of Staff for Installation Management (ACSIM) establishes Army facility standards and approves deviations from the standards.

8.13.1 Residential Communities Initiative

The intent of the Residential Communities Initiative (RCI) is to improve the housing for military families by providing quality housing that is built in attractive neighborhoods.

The Military Housing Privatization Initiative (MHPI) legislation allows developers to build housing to local standards. In those areas where local standards do not meet the quality of life requirements of soldiers, the Community Development and Management Plan (CDMP) process allows a negotiated determination of those standards. To ensure a uniform level of quality throughout RCI, Headquarters, Department of the Army has developed a "Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing" to be used as reference points during CDMP preparation.

Hunter AAF has partnered with GMH Housing to improve the military family housing community and to privatize family housing at the post. GMH Housing is responsible for developing, renovating, constructing, maintaining, and managing Hunter AAF's family housing, including the grounds, infrastructure, and roads in each housing community. GMH Housing is committed to creating a Southern Living Station of Choice. On Hunter AAF, the architectural expression of this slogan looks toward the urban character of nearby Savannah for inspiration (Fig. 8.36).

Fig. 8.36 – Example of military family housing on Hunter AAF.

8.13.2 Department of the Army (DA), Facilities Standardization Program

Under the DA Facilities Standardization program, standard design packages are developed for facility types that are repetitively designed and constructed at Army installations. These design packages are developed to the definitive design level (10–15 percent) and once approved are mandatory for Military Construction (MILCON), Army.

Currently, there are 31 DA standard design packages. Headquarters, U.S. Army Corps of Engineers has established 8 Centers of Standardization to develop and maintain the definitive and design packages. See Appendix P, DA Facilities Standardization Program Centers of Standardization for a list of the various centers and the facility type assigned to each center (Centers of Standardization homepage).

Army Chapel Design Standards are complete and approved. See The Army Standard for Chapel Construction – January 2004 and Memorandum for Record, subject: The Army Standards for Chapels, dated 21 January 2004.

8.13.3 Unaccompanied Personnel Housing (Army Barracks Modernization Program)

The Army's Barracks Modernization Program is based upon a whole community approach providing modernized private living and sleeping areas for soldiers as well as a more functional work environment. This is being realized with the construction and renovation of barracks and associated Company Operations Facilities (COF), Battalion Headquarters (BN HQ) and Brigade Headquarters BDE HQ), and Dining Facilities (DFAC). For a detailed discussion of the Army Barracks Modernization Program see the Army Barracks Master Plan. The Army Barracks Master Plan only includes requirements for activity duty permanent party soldiers' barracks (Fig. 8.37).

8.13.4 Army Barracks Standards

The Army Barracks Modernization Program design criteria give commanders and contractors the direction to incorporate best business practices around a modular floor plan. The Army Barracks Master Plan, Appendix I, Army Barracks Standards, promotes barracks with an appropriate balance between private and common areas. The Vice Chief of Staff of the Army (VCSA) specified the "New Army Barracks Construction Criteria" in his Memorandum Subject: New Barracks Construction Criteria, dated 11 July 2002 in which he strongly endorsed the new standards. The criteria were further revised in Memorandum Subject: Revised Barracks Construction Criteria, dated 1 May 2003, which makes the following four changes to the Army Barracks Standards:

Fig. 8.37 – New barracks under construction on Hunter AAF.

- Establishes the two-bedroom/one bath module as the standard module;
- Requires installation of a stove or cook top;
- Requires laundries in the barracks; and
- Eliminates the separate soldier community building.

See the above memoranda for detailed guidance.

8.13.5 Furnishings

Acquisition of new furnishings is planned and accomplished in concert with the facility design and construction schedule so that delivery of the new furnishings coincides with the beneficial occupancy date (BOD).

The U.S. Army Interior Design Manual (IDM) for Single Soldiers provides guidance to help furniture managers prepare order packages. The manual uses standard Army furniture specifications; i.e., medium oak wood furnishings or acceptable

wood/steel alternatives, construction and fabric specification, and specific information for authorized items of furniture. The manual also contains standard living/sleeping room arrangements and plans with color schemes. The manual includes information on waiver requirements, the procurement process, order forms, and final inspection checklist.

Construction design criteria for COFs, BN HQ buildings, BDE HQ buildings, and DFAC facilities can be viewed on the web at ProjNet.

Fig. 8.38 – Wilson Boulevard gate and Visitors Center.

8.13.6 Army Lodging

The Army Lodging Standards promote economies in serving the Army traveler, but not at the expense of quality or service. The standards define the facilities and the level of service the Army traveler should expect (Fig. 8.38). The level of service should be consistent from installation to installation. The following documents provide the service, operations and facilities standards for Army Lodging.

- Army Lodging Standards for Service
- Army Lodging Standards for Operations
- Army Lodging Standards for Facilities

Fig. 8.39 – Illustration of the proposed CFRC for Hunter AAF.

8.13.7 Morale, Welfare and Recreation (MWR) Branded Theme Operations

The Army Community and Family Readiness Center (CFRC), through its Theme Operations, offers comprehensive theme packages pertaining to restaurants and entertainment centers located on an installation (Fig. 8.39). These packages are customized to the installation.

CFRC will conduct an assessment for market viability and provide architectural designs and other promotional items. Information on the CFRC Branded Theme Operations, including how to get a theme operation, management support, and food service support, is located on the CFRC website at the Army Brand Theme Operations Home Page.

Fig. 8.40 – Wilson Boulevard gate and Visitors Center.

8.14 PHYSICAL SECURITY REQUIREMENTS

To assure that the required physical security measures are met, the installation Physical Security Officer will be coordinated with during the planning, design, and construction of all construction projects (AR 190-13, *The Army Physical Security Program*, Para 1-26) [Fig. 8.40]. (See also Section 12, Force Protection for a detailed discussion regarding Antiterrorism measures.)

8.15 ARMY STANDARDS

The following cited Standards shall be met:

- Army Regulation (AR) 420-70, *Buildings and Structures*
- Unified Facilities Criteria (UFC) 3-520-01, *Interior Electrical Systems*
- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Army Barracks Master Plan, Appendix I, Army Barracks Standards
- Memorandum Subject: Revised Barracks Construction Criteria, dated 1 May 2003
- Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing
- Army Lodging Standards

8.16 REFERENCES

The following references are provided for guidance.

- Army Regulation (AR) 190-13, *The Army Physical Security Program*
- Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 405-45, *Real Property Inventory Management*
- Army Regulation (AR) 405-70, *Utilization of Real Property*
- Army Regulation (AR) 420-1, *Army Facilities Management* (**Draft**)

- Unified Facilities Criteria (UFC) *2*-600-01*, Installation Design,* Chap 8
- Unified Facilities Criteria (UFC) 1-200-01, *Design: General Building Requirements*, 31 July 2002
- Unified Facilities Criteria (UFC) 4-510-01, Design: Medical Military Facilities
- Unified Facilities Criteria (UFC) 3-400-01, Design: Energy Conservation
- Engineering Regulation (ER) 1110-345-122, *Engineering and Design, Interior Design*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- U.S. Army Corps of Engineers, Design Guide (DG) 1110-3-122, *Design Guide for Interiors*
- Department of Defense (DoD) Interior Design Website
- Technical Instructions (TI) 800-01, *Design Criteria*
- Technical Instructions (TI) 809-04, *Seismic Design for Buildings*
- Technical Instructions (TI) 809-05, *Seismic Design Evaluation and Rehabilitation for Buildings*
- Technical Instructions (TI) 811-16, *Lighting Design*
- Technical Manual (TM) 5-683, *Electrical Interior Facilities*
- Technical Manual (TM) 5-688, *Foreign Voltage and Frequencies Guide*
- Technical Manual (TM) 5-809-10/Navy NAVFAC P-355/Air Force AFM 88-3, Chap 13, *Seismic Design for Buildings*
- Technical Manual (TM) 5-809-10-2/Navy NAVFAC P-355.2/Air Force AFM 88-3, Chap 13, Sec B, *Seismic Design Guidelines for Upgrading Existing Buildings*
- Army Barracks Master Plan
- Air Force Sustainable Facilities Guide
- Air Force Interior Design Guides
- Office of the Assistant Secretary of the Army for Financial Management and Comptroller (OASA (FM&C)) Sales and Out lease of Army Assets - Installation Guide

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Whole Building Design Guide
- Unified Facilities Guide Specifications (UFGS), "Division 12 - Furnishings", Construction Criteria Base
- Engineering and Construction Bulletins

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SECTION 9
CIRCULATION DESIGN STANDARDS

9.1 INTRODUCTION

9.1.1 The image of Hunter AAF is significantly affected by the design and location of roadways, walkways, entrances and parking lots. The primary roadway system and parking lots occupy considerable amounts of land and are visually dominant features. Objectives and criteria for locating the primary circulation system are presented in Section 7, Site Planning Design Standards. This section discusses the details of circulation system design and their impacts.

9.1.2 The circulation system provides a primary vantage point from which the installation is viewed. Safe and efficient vehicular movement results in better orientation and contributes to the development of a positive environment for personnel and visitors. This section is focused on the features that comprise the circulation system to identify specific characteristics that contribute to the appearance of the visual zone.

9.1.3 Roadways, pedestrian walkways and bicycle trails are designed to provide a hierarchy of circulation and carrying capacity. Functionally, a hierarchical network is created to separate incompatible types of traffic. This separation of traffic promotes sustainability because it results in more efficient energy consumption.

Fig. 9.1 – Bicycle and pedestrian circulation are accommodated on streets and sidewalks in the family housing areas.

9.1.4 Visually, the circulation hierarchy can be reinforced through design, planting, signage and lighting to promote a more attractive visual experience and promote a sense of orientation.

9.2 CIRCULATION OBJECTIVES

The goal for the circulation system on Hunter AAF is to establish a sustainable system that promotes aesthetic appeal, environmental preservation and energy conservation, while providing safe and efficient circulation. The objectives below describe the design principles that are followed to achieve this sustainable circulation system:

- Provide circulation that meets antiterrorism and security requirements and promotes and enhances public health and safety.
- Provide a system of circulation that includes all forms of vehicular and pedestrian circulation in the Housing Visual Zone (Fig. 9.1).
- Provide systems that separate vehicles and pedestrians in all other visual zones (Fig. 9.2).
- Blend the circulation system to the natural conditions of the site to create the best appearance (Fig. 9.3).
- Improve the existing circulation network for expansion, safety, way finding and appearance.
- Promote maintenance and repair of existing and proposed circulation systems.

Fig. 9.2 – Vehicles and bicycles share the roadway and pedestrians use a sidewalk along North Lightning Road.

Fig. 9.3 – Blend circulation routes to the natural features.

9.3 ROADWAY HIERARCHY

9.3.1 The roadway network on Hunter AAF functionally and visually reflects a logical hierarchy of traffic circulation. The network separates types of traffic by function and volume, ranging from through traffic to local traffic. The visual character of each segment of the network appropriately conveys its role and function within the overall network. The basic network is classified by the following terms describing the type, character and appearance of the roads (Fig. 9.4).

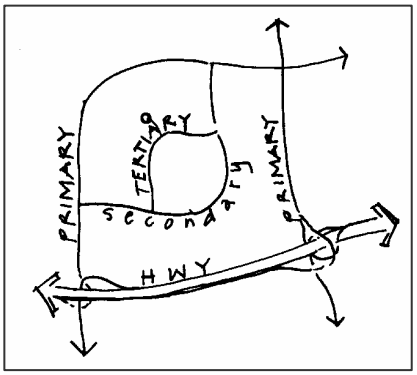

Fig. 9.4 – The roadway hierarchy includes highways and primary, secondary and tertiary roads.

Highways

Highways provide primary high-speed traffic access to and around Hunter AAF. The installation is bound by GA-21 (Staley Avenue) on the north, GA-204 (Abercorn Street) on the east and south and Veterans Parkway on the west. No highways extend onto Hunter AAF. Design characteristics of highways include the following:

- Continuous, relatively straight or large radii curvilinear alignments that carry high-speed through-traffic movement between major activity centers within a region.

- A minimum of two lanes in each direction typically divided by a median or median divider.
- Alignments that border land use areas rather than bisect them and green space buffers exist between the road and adjacent uses.
- Controlled access onto the road.
- Either grade-separated or at-grade channelized intersections with traffic signal controls.
- Shoulders for emergency stopping but strict prohibition of on-street parking.
- Street signing, lighting and planting that reflects the high-speed nature of traffic movement.

Fig. 9.5 – Duncan Drive, leading from Montgomery Gate, is one of several primary roadways.

Primary Roadways

These are the arterial routes that connect major activity centers, provide the primary access through the installation and provide the means by which most people view the Hunter AAF (Fig. 9.5). Primary roadways traverse the entire cantonment area and carry the heaviest volume of traffic. Direct access to these roads is restricted and crossing is only permitted at major intersections. Primary roadways are divided in places with a median. Design characteristics of primary roadways include the following:

- Continuous, through-traffic alignment that is relatively straight to accommodate moderate to heavy traffic.
- Alignments that form the boundary between different land use areas.
- Two or more moving lanes in each direction typically divided by a median.
- Controlled access and a minimum of curb cuts limited to entranceways to major facilities or building groups.
- At-grade intersections with stop signs at cross streets, or signal controls at major intersections.
- On-street parking is prohibited.
- Medians, street lighting, signing and planting that indicate the importance of the road.
- Curbs, gutters and sidewalks are provided within the cantonment area.

Fig. 9.6 – Haley Avenue is a secondary roadway.

Secondary Roadways

Secondary roadways serve as connectors between primary roads and tertiary roads and typically connect primary roads to adjacent land use zones (Fig. 9.6). Secondary roads accommodate moderate

to slow traffic speeds with one moving lane in each direction. On-street parking is prohibited and left-turn lanes provided at intersections with primary roads. Design characteristics include:

- Continuous through-traffic alignment between primary roads, either straight or curvilinear based upon the design speed topography and land pattern.
- Direct access to abutting property.
- A maximum of two moving traffic lanes in each direction, either undivided or a boulevard with planted median.
- On-street parking generally prohibited.
- Sidewalk separated from the road by a planting strip.
- Street lighting, signing and planting that reflects the moderate-to-slow speed nature of traffic and the character of the land use area they are in.
- Curbs, gutters and sidewalks provided in the cantonment area and residential areas with densities greater than two dwelling units per acre.

Fig. 9.7 – Streets in the housing areas are all tertiary roadways.

Tertiary Roadways

Tertiary roadways provide access to individual facilities, parking and service areas. They are designed to handle low speed and low volumes of traffic, with one lane in each direction. Tertiary roadways have T intersections and cul-de-sacs to reduce through traffic, promote safety and limit noise impacts from truck traffic (Fig. 9.7). Design characteristics include:

- Alignments designed to discourage through-traffic.
- Alignments are relatively short and straight or curvilinear in keeping with topography, land use and the slow speed nature of traffic.
- Generally a maximum of two moving traffic lanes, one in each direction.
- On-street parking is generally prohibited.
- Curbs, gutters and sidewalks provided in the cantonment area and residential areas with densities greater than two dwelling units per acre.
- Sidewalks may be limited to only one side, depending upon need.
- Street lighting, signing and planting in character with the slow speed nature of traffic and the land use areas where the road is located.

Cul-de-sacs

Cul-de-sacs are short dead-end tertiary roadways located primarily in housing areas (Fig. 9.8). They connect at one end to a tertiary or secondary roadway and have a turnaround at the other end, providing direct access to abutting property while preventing through traffic. Design characteristics include:

- Short, straight, or curvilinear alignment to serve abutting property.
- Generally a maximum of two traffic lanes, one in each direction.
- Generally a maximum length of 600 feet, or less, except in areas where terrain and low density justify a longer length.
- Turnarounds with a diameter large enough to accommodate fire and garbage trucks.
- Turnaround, either symmetrical or offset.
- Turnaround center planting islands to reduce the expanse of paved area.
- Overflow parking provided in parking bays along the roadway or in the center of turnaround planting islands.
- Sidewalks, if any, generally limited to one side of the road.
- Street lighting, signing and planting in character with the slow speed nature of traffic and the land use area being served.

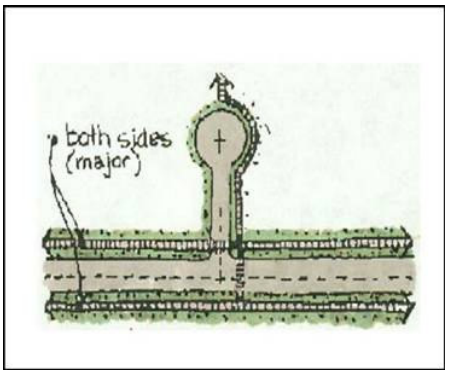

Fig. 9.8 – Plan view sketch of a cul-de-sac street.

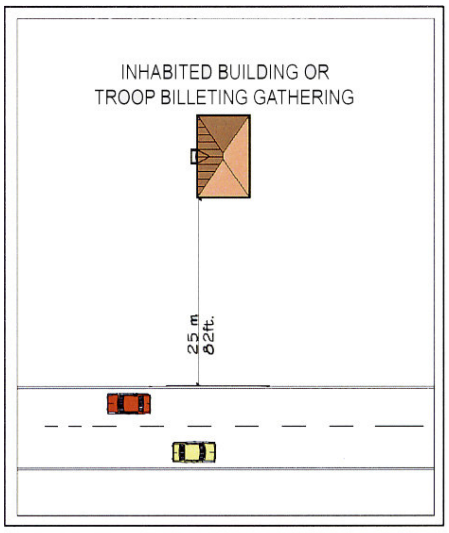

Fig. 9.9 - Diagram of minimum building standoff distances from roadways to meet DoD antiterrorism standards.

9.4 BUILDING STANDOFF DISTANCES FROM ROADWAYS

At Hunter AAF, all inhabited buildings and primary gathering spaces within the controlled perimeter will be setback a minimum of 82 feet (25 meters) from roadways (Fig. 9.9). (See, Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, Table B-1).

9.5 ROADWAY SYSTEM DESIGN

9.5.1 New roadways and improvements to existing routes will be aligned and designed to promote sustainability. They will minimize impacts, relieve driver monotony and provide a positive visual experience for the user, without compromising safety (Fig. 9.10). The following design techniques should be applied to circulation system design:

9.5.2 Blend Circulation with Natural Landform

The horizontal and vertical alignment of roads, walkways and bikeways should minimize landform disturbance and blend with the natural setting as follows (Fig. 9.11):

- Minimize cut and fill by avoiding steep terrain and aligning roadway, walkway and bicycle routes to cross slopes diagonally or parallel to the contours rather than perpendicular to the contours.
- Contour cut and fill slopes to blend with the natural landforms.
- Blend road drainage ditches, swales, or channels into the natural landform.
- Use cluster development wherever possible to limit the lengths and required intersections of roadway and other circulation system elements and to preserve land.
- Minimize pedestrian, railroad and bikeway crossings of highways, primary roads and secondary roads.

Fig. 9.10 – Billy Mitchell Boulevard is a well-designed roadway that contributes to a positive visual image.

9.5.3 Adapt circulation to preserve vegetation

Design roads, walkways and bike paths to minimize disturbance to existing vegetation, encourage re-vegetation in disturbed areas and reduce the visual impact of landscape disturbance (Fig. 9.12):

- Align roads through open areas rather than forested areas.
- Minimize cut and fill to reduce the area of trees that must be cleared.
- Clear only for sight distances rather than uniform right-of-way clearing.
- Utilize tree wells or retaining walls to preserve specimen trees or significant vegetation areas.
- Provide optimum conditions for re-vegetation by following proper planting and maintenance techniques.
- Restore vegetation to disturbed areas using naturalistic plantings of native plant material.

Fig. 9.11 – Billy Mitchell Boulevard and the adjacent walkway were designed to blend with surrounding features.

9.5.4 Minimize adverse impacts on adjacent land uses

Air Pollution

Locate roadway alignments to minimize the impact of traffic-emitted pollutants on adjacent development. This can be accomplished by the following measures:

- Locate roads adjacent to land uses that are minimally affected by traffic-emitted air pollutants.

- Reduce the impact of traffic-emitted pollutants on more sensitive land use areas by locating the roadways downwind and/or providing planted buffers.
- Hard surface tactical vehicle trails to reduce dust pollution.

Noise Pollution

Design and locate roadways to reduce the impact of traffic noise on adjacent development. This can be accomplished by the following measures:

- Roads should be physically separated from sensitive land uses including residential, medical, educational, recreational, administrative, religious, library, community, or child care facilities.
- Use noise abatement techniques such as berms, sound barrier walls and plant material to reduce noise levels (Fig. 9.13).
- Reroute truck and tank traffic to roadways adjacent to less noise sensitive land uses. Tracked vehicle traffic is routed to a system of tactical vehicle trails that are separate from corridors used by wheeled vehicles.

9.6 INTERSECTIONS

Intersections are the most dangerous areas of the circulation system. New and improved intersections are planned to provide safe and efficient traffic flow for pedestrian as well as vehicular traffic. The following design techniques are used to plan or improve intersections (Fig. 9.14):

- Align roadways to intersect at 90 degrees (85-95 degrees is acceptable).
- Avoid dangerous, complex intersections of more than two streets intersecting at one point.
- Eliminate intersections that are in close proximity to one another. They should be no closer than a minimum distance of 100 feet (30 meters).
- Modify existing intersections in conjunction with development projects on adjacent sites or that increase traffic at nearby intersections.
- Use T-intersections for tertiary road intersections with secondary or primary roads to reduce conflict and promote safety.
- Provide turning lanes at all intersections along primary roads to eliminate interference with through traffic flow.

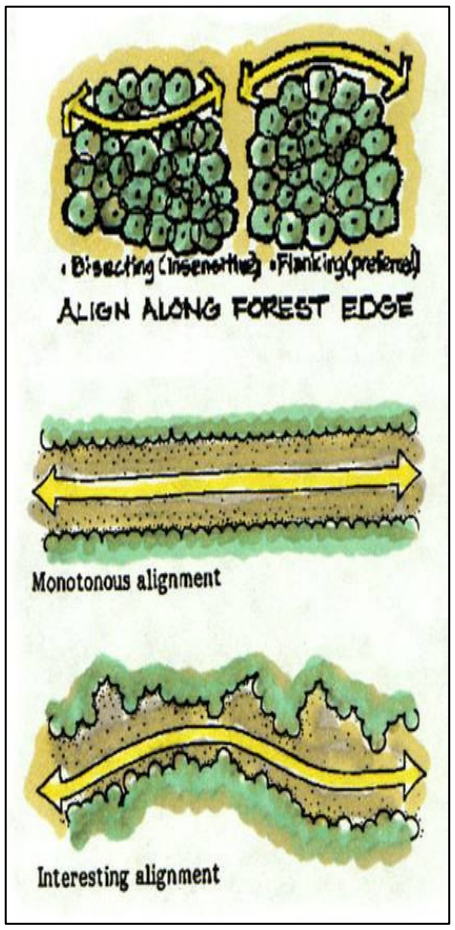

Fig. 9.12 – Examples of roadway and trail alignments to preserve trees and provide visual interest.

Fig. 9.13 – Landscaping along the reservation boundary buffers housing from GA-21 traffic noise.

- Minimize intersections along primary roads to reduce points of conflict and increase safety. Existing intersections with secondary and tertiary streets can be eliminated by the use of cul-de-sacs, with traffic routed along parallel streets to primary and secondary streets.
- Include adequate sight distances to meet minimum standard requirements at all intersections. The location from where the driver is waiting to cross or enter a traffic lane to a point 75 feet (23 meters) down the centerline to the right and the left forms the sight triangle.
- Minimize pedestrian and bicycle intersections with primary streets.
- Provide crosswalks at all intersections where pedestrians might cross. Crosswalks are marked with paint or vinyl strips, or identified with a different paving surface**.**
- Provide pedestrian access to persons with disabilities in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS). In the event of a conflict the most stringent standards will be applied.
- Create local service drives or access roads parallel with highways and primary roads to provide access to properties fronting the primary road and avoid a direct curb cut from the primary road to each individual property.
- Install signals at intersections between railroad tracks and high-speed roads. Rail crossings must be well-marked and have a smooth transition. All non-signalized railroad crossings must be well marked and have a clear line of sight down the tracks.

9.7 ENTRANCE GATES

Entry gates, or access control points (ACPs) are primary components of the Hunter AAF circulation system. ACPs must be be functional, while providing security protection for the installation and for personnel and others waiting off-post to be admitted. ACPs are designed as a visual amenity to provide an aesthetically pleasing entrance to and exit from the installation. See Section 12.7 for information on the design standards for installation gates.

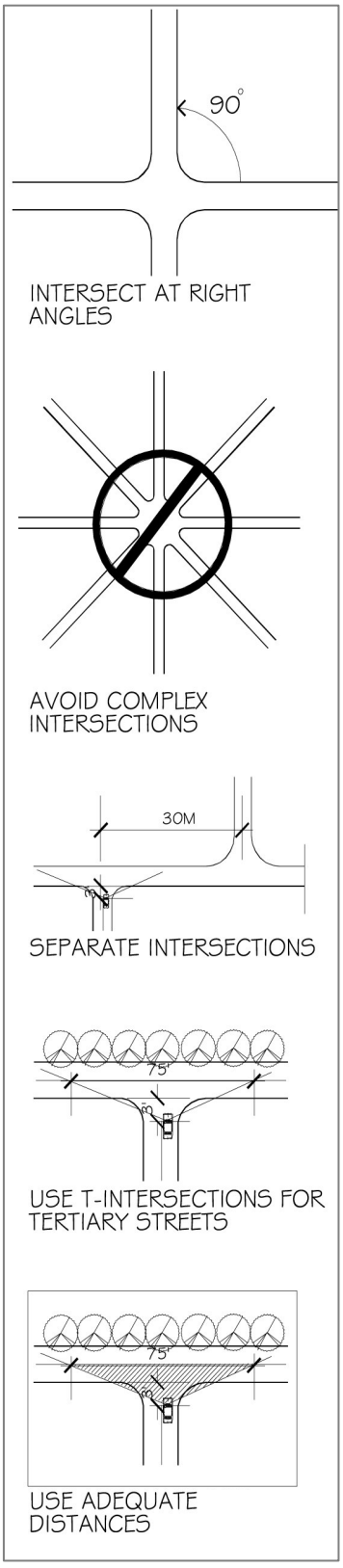

Fig. 9.14 – A set of design guidelines for intersections.

9.8 PARKING REQUIREMENTS

9.8.1 The total quantity of parking in any one location will vary with the needs of the facility. The following items are general considerations to be used in developing parking requirements for a project:

- Minimum parking allowances for non-organizational vehicles are generally based on the current *Architectural and Engineering Instruction*. Higher parking allowances for individual facilities are permitted if the increase is demonstrated by a parking study.
- All parking lots will be designed to be accessible to persons with disabilities in accordance with the requirements of the UFAS, paragraph 4.1.1(5)(a). If parking spaces are provided for employees or visitors, or both, then accessible spaces shall be provided in conformance with the required minimum number of accessible spaces shown in Figure 9.15.
- For initial planning and programming, allocate 400 square feet of parking lot area per car. The total provides adequate minimum space for the parking spaces, access drives and planting islands that make up a parking lot. This allocation does not allow for including tactical military vehicles in a parking lot.
- Minimize parking space requirements of a facility by selecting a site that will allow the sharing of parking with adjacent activities.
- Small parking lots are generally preferable to large lots because they enhance the visual environment by increasing the percent of landscaped area to paved area.
- The monotony of large parking areas can be altered by the use of designs such as curvilinear parking or the introduction of large planting islands and green strips.
- Alternative means of access to facilities, such as walkways and bikeways, are encouraged to reduce dependence on vehicular circulation between nearby buildings.

Total Spaces in Parking Area	Required Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2% of Total Spaces
1001 and up	20 plus 1 for each 100 spaces over 1000

Fig. 9.15 – A table showing the minimum number of accessible parking spaces required for parking lots of different capacities.

9.9 PARKING LOT LOCATION AND DESIGN

9.9.1 Parking areas are designed and enhanced to provide more pleasing visual effects and a more comfortable physical experience for parking lot users. The following design techniques are suggested to create more aesthetically pleasing, physically comfortable parking lots:

- Locate parking lots between and behind buildings to reduce the visual impact from the circulation system.
- Locate parking lots on relatively level areas to avoid excessive cut and fill.
- Design parking lots to be efficient in the design and placement of access drives and parking spaces. All drives providing direct access to parking spaces should provide spaces on both sides of the drive.
- Provide planting areas at the ends of all rows of parking spaces and grade them to permit stormwater to infiltrate. Plant deciduous trees in the islands to soften the visual expanse of the parking lot and to provide shade (Fig. 9.16).
- Use natural topography and existing trees to visually screen parking areas from adjacent facilities, roadways and other parking lots.
- Design parking lots to preserve significant existing trees. Provide a planting area around the tree that is large enough to allow water to the root system.
- Pave parking lots with concrete, asphalt, or other durable material.
- Provide greater below grade and above grade parking capacity in densely developed areas. Parking structures are expensive, but they provide a number of benefits including efficient land use, reduced visual impact and protection of vehicles from inclement weather (Fig. 9.17). Parking structures must be designed to meet antiterrorism requirements.

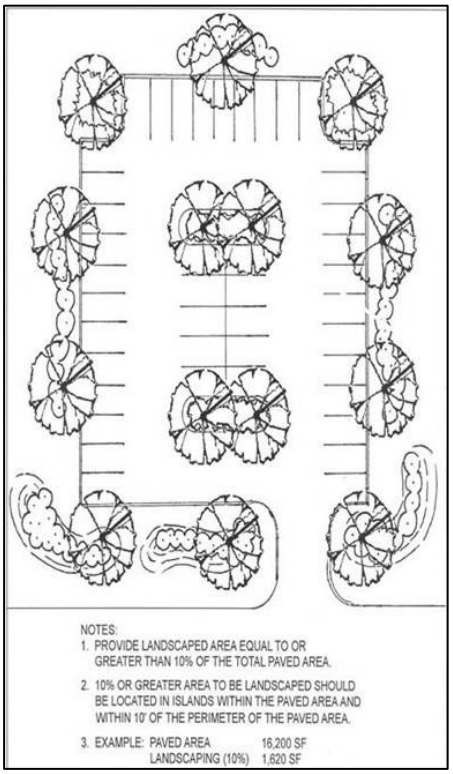

Fig. 9.16 – Guidelines for tree planting in parking lots.

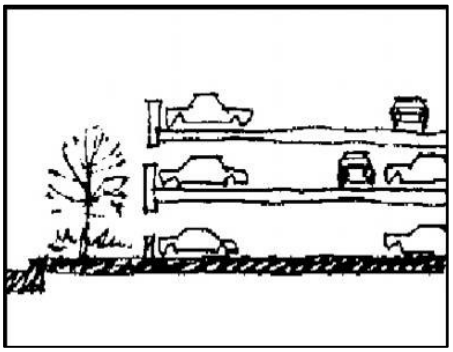

Fig. 9.17 - Parking structures reduce the paved area needed for parking, but are expensive and highly visible.

9.9.2 A comprehensive parking area design guide that includes siting, parking area types, geometry (parallel, perpendicular, angled), access and maintenance consideration is located at the following website: U. S. Air Force Landscape Design Guide, Section 14, Parking Areas.

9.9.3 Antiterrorism Setback Requirements

Parking lots within a controlled perimeter shall be located a minimum of 82 feet (25 meters) from inhabited structures and from troop billeting and primary gathering areas (UFC 4-010-01, Table B-1). Designated parking for family housing located within secured perimeters with access control is excluded from the 82 feet (25 meters) setback requirement.

9.10 SERVICE AREAS

Most buildings require a service area to accommodate trash and recycling dumpsters. Facilities that require pickup and delivery of bulk supplies should include a service area that allows for easy access to a loading dock. Service areas should be designed according to the following guidelines:

- Service areas are designed to provide direct, easy access and adequate turning space for larger vehicles (Fig. 9.18).
- Access routes to loading docks should be reserved for service and emergency vehicles. Privately owned vehicle (POV) and organizational vehicle parking should not be included in the service areas or access drives.
- Conflicts between truck loading docks and railroad operations should be avoided.
- Service areas should be screened from public view to reduce negative visual impacts (Fig. 9.19).
- Service areas shall meet all antiterrorism requirements.

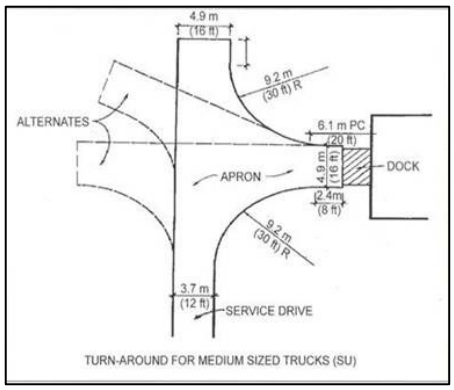

Fig. 9.18 – Dimensions needed for maneuvering trucks to a loading dock.

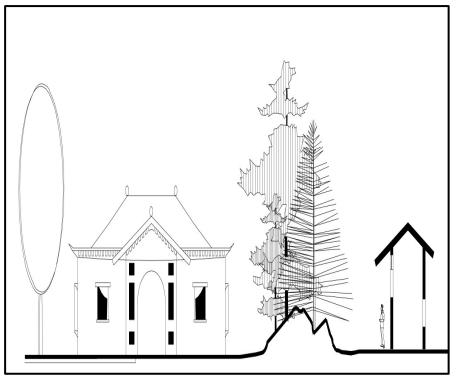

Fig. 9.19 – Landscaping is usually adequate to visually screen a service area.

9.11 DROP-OFF AREAS

Generally, drop-off areas are discouraged at Hunter AAF, but if a drop-off area is needed the following guidelines should be used:

- Facilities that include a high percentage of persons arriving as passengers may include a passenger drop-off area. Included are buildings such as headquarters, child development centers, schools, dining facilities and clubs.
- A drop-off area will provide adequate space for vehicles to pull off the access drive to avoid interference with moving vehicles and will include appropriate accessibility features (Fig. 9.20).
- The paved vehicle portion of a drop-off area may be no closer to a building than the minimum standoff distance prescribed by antiterrorism standards.
- The access drive must be clearly defined and marked to prohibit parking of other vehicles in the drop-off area.
- Physical barriers must be used to separate the vehicular part of the area from the pedestrian part. These barriers may include curbing, planters, or other barriers together with signage to identify and restrict access.
- The driveway must be configured so that vehicles can be restricted during times of high alert.

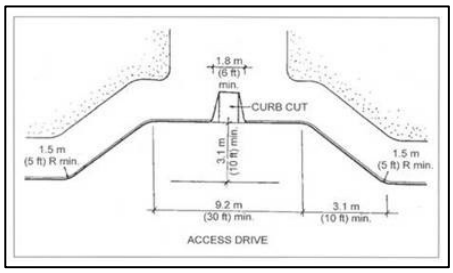

Fig. 9.20 - Typical dimensions of a passenger drop-off area.

- Access to the driveway shall be located outside the required standoff area with the initial approach parallel to the building, or a barrier must be directed to prevent direct vehicular movement toward the building (Fig. 9.20).

9.12 WALKWAYS AND PEDESTRIAN CIRCULATION

9.12.1 Walkways provide connections for pedestrians between buildings and supporting facilities and adjacent buildings. Well-designed and located pedestrian walkways provide a desirable alternative to driving from place to place (Fig. 9.21).

Fig. 9.21 – Walkways promote walking and use of bicycles in place of driving for short trips.

9.12.2 To encourage the use of walkways as an alternative to driving, pedestrian walkways should be designed and located to provide a comfortable, enjoyable experience. The use of walkways on Hunter AAF promotes development sustainability by conserving energy, reducing air pollution and decreasing the land requirement for parking. By accommodating walking the pedestrian circulation system can increase the physical fitness of residents and visitors.

9.12.3 To develop the walkway system the following guidelines are applied to new construction and renovation projects:

- Provide safe and secure pedestrian facilities that are separate from vehicular routes.
- Provide links between major attractions and generators of pedestrian traffic.
- Provide walkways in areas where “pathways” or short cuts have been created by pedestrians going through grass and other non paved areas.
- Provide information on the locations of walkways where pedestrians are likely to see it.
- Design walkways to be comfortable and pleasant to use.
- Provide amenities for pedestrians such as lighting, benches and shade trees.
- Provide accessibility to all users, including physically impaired or challenged persons.
- Furnish all street and driveway crossings with proper markings and signs. Make them accessible to persons with disabilities in accordance with requirements of the UFAS (Fig. 9.22). See the following UFAS paragraphs for the respective standards: Curb Ramps, paragraph 4.7; Ramps, paragraph 4.8; Stairs, paragraph 4.9.

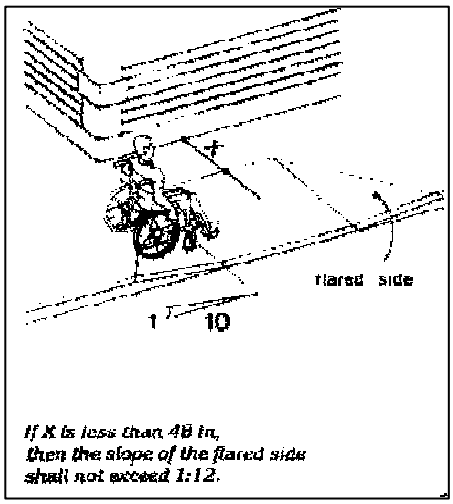

Fig. 9.22 - Ramps must be provided in accordance with UFAS Standards.

- Provide design consistency throughout segments of the walkway system.
- Ensure that walkways are properly drained to avoid puddles.

9.12.4 Walkway Network Hierarchy

Sidewalks are classified to conform to the hierarchy roadway system. They are classified as primary walkways, secondary walkways and tertiary walkways. Non-roadway oriented sidewalks should be sized and placed where people will use them rather than create worn "shortcut" paths. Railroad track crossings should be avoided, but where necessary, they should be well marked and have a good line of sight in each direction. Walkways crossing areas of railroad ballast are composed of small, well-drained rock for a safer, more comfortable footing.

Primary Walkways

Primary walkways are routed along primary roadways within the cantonment area (Fig. 9.23). These walkways are also used for high volume pedestrian routes between major destinations. They are designed to be significant features in the landscape and to visually relate to the facilities they serve. They should be paved with concrete, brick, or other pavers. Primary walkways should be sized to accommodate anticipated pedestrian use. They should have a minimum width of 6 feet (1.8 meters) and a maximum width of 10-12 feet (3-3.5 meters) in high use areas (Fig. 9.24).

Secondary Walkways

Secondary walkways are provided along secondary and tertiary streets (Fig. 9.25). These walkways are also used for moderate volumes pedestrian routes between activity centers and housing areas. They should provide access to building entrances, plaza areas, or streets. They should be paved with concrete, brick, or other pavers. These walkways should be sized to accommodate anticipated pedestrian use, but not less than 4 feet (1.2 meters) and a maximum of 10 - 12 feet (3-3.5 meters) in high use areas (Fig. 9.24).

Tertiary Walkways

Tertiary walkways provide pedestrian walkways in recreational and scenic areas for exercise and hiking (Fig. 9.26). They can be paved with concrete or bituminous asphalt or constructed with woodchips. Tertiary walkways have a meandering and curvilinear alignment. Paved walkways have a minimum width of 4 feet (1.2

Fig. 9.23 – Typical primary walkway.

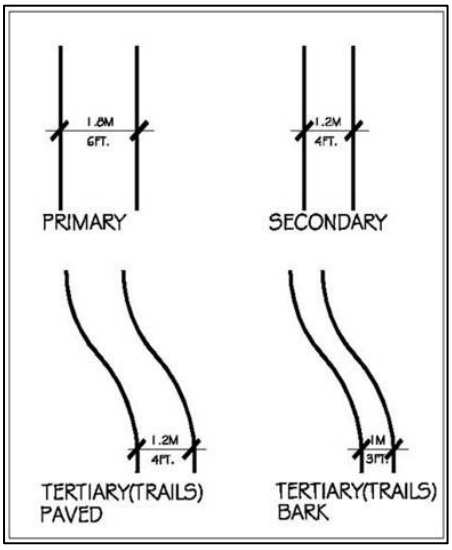

Fig. 9.24 – Hunter AAF minimum width for walkways.

Fig. 9.25 – Typical secondary walkway.

Fig. 9.26 – Typical tertiary walkway.

meters). Wood chip trails should have a minimum width of 3 feet (1 meter) (Fig. 9.24). Where paths are designated for use by bicyclists and pedestrians, the widths are increased an additional three feet for each bike lane.

9.12.5 **Site Amenities at Walkways.**

Select and locate site furnishings to reinforce the walkway system hierarchy (Fig. 9.27). Provide directional and informational signage, where appropriate. Locate site furnishings, such as benches, tables, waste receptacles, drinking fountains and signage in response to travel distance and traffic volume. Place site furnishings at regular intervals along walkways, parallel to the walk and facing the flow of pedestrian traffic.

9.12.6 **Landscaping at Walkways.**

Use a combination of canopy and ornamental trees along sidewalks to provide shade, define the path, provide visual interest and discourage the creation of "shortcuts" (Fig. 9.27). Plant an evergreen buffer to screen harsh winds and undesirable views. Discourage the use of flowering and fruit bearing trees and shrubs along walkways because of the threat of insects or debris problems.

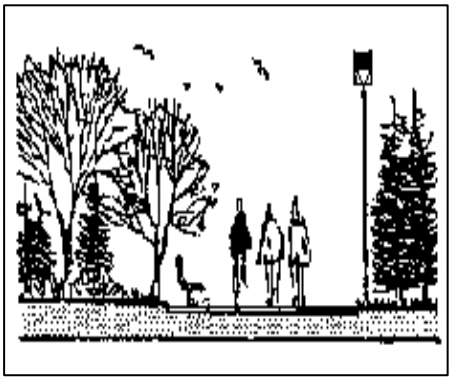

Fig. 9.27 – Place landscaping and site furnishings along walkways to increase their attractiveness and use.

9.13 BIKEWAYS

9.13.1 Bicycles are used as alternatives to automobiles by some Hunter AAF personnel. Cycling is a popular recreational activity that is enhanced by the availability of a safe and well-planned system of bikeways.

9.13.2 The Hunter AAF bikeway system follows designated routes along the roadway system and provides direct routes between a number of primary and secondary destinations. As new projects are completed, continuous improvement of the system is made to minimize conflicts between bicyclists, pedestrians and motorists.

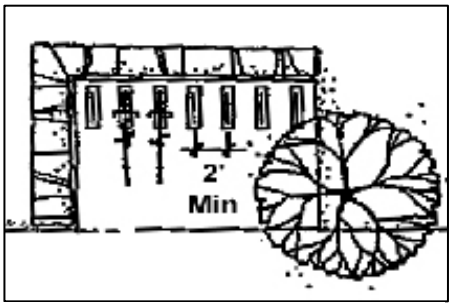

Fig. 9.28 - Two-foot spacing provides for easy access to each bicycle.

9.13.3 Provide bicycle storage racks in areas that can be visually supervised and in close proximity to building entrances, high activity areas, major workplaces and recreational facilities, while avoiding conflicts with pedestrian circulation. A rack or other structure is provided so bicycles may be locked and at least two feet should be allowed between bicycles (Fig. 9.28).

9.13.4 Roadway lights and building exterior lights also serve as bikeway lights. Maximum use is made of multi-purpose lighting

systems. Paragraph 10.4 of Technical Manual (TM) 5-811-1, Electric Power Supply and Distribution directs the following bikeway lighting standards.

Intensities

Values are dependent upon whether bicycle routes are adjacent to roadways or are isolated from vehicular traffic.

Roadways

Bikeways are illuminated to not less than one-half the maintained illumination required for adjacent roadways. Areas varying in grade, such as stairs and ramps, will require special treatment. Crosswalks in the middle of the block will be illuminated to 1.5 to 2 times the normal roadway lighting level.

Remote from Roadways

Bikeways that are remote from roadways will have a minimum of 5 lux (0.5 foot-candle) average illumination. Tunnels will have 40 lux (4.0 foot-candles), ramps will have 6 lux (0.6 foot-candles) and overpasses will have 3 lux (0.3 foot-candles) illumination.

Pole Design

Where pole mounted lights illuminate only a bikeway, shorter poles are most suitable, but luminaire height will not be less than 10 feet. Construction will be such as to minimize vandalism by use of break-resistant lenses, tamperproof screws and sturdy poles.

9.13.5 The federal Manual of Uniform Traffic Control Devices (MUTCD) provides standards signs and markings for bicycle lanes and related bicycle facilities. See the MUTCD, Chapter 9 and any applicable amendments for traffic controls for bicycle facilities standards.

9.14 ARMY STANDARDS

9.14.1 The cited Army Standards shall be met.

- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Unified Facilities Criteria (UFC) *3-210-02,* Design: POV Site Circulation and Parking
- Unified Facilities Criteria (UFC) 3-250-18FA, Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas

- Unified Facilities Criteria (UFC) *3-260-02,* Design: Pavement Design for Airfields

- Technical Manual (TM) 5-811-1/Air Force AFJMAN 32-1080, *Electric Power Supply and Distribution*

- Technical Manual (TM) 5-850-2/Air Force AFJMAN 32-1046, *Railroad Design and Rehabilitation*

- Manual For Railway Engineering

- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*

- Americans with Disabilities Act Accessibility Guidelines (ADAAG)

- Uniform Federal Accessibility Standards (UFAS)

- Manual of Uniform Traffic Control Devices (MUTCD)

9.15 REFERENCES

9.15.1 The following references are provided for guidance.

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 9

- U.S. Air Force, Landscape Design Guide, Parking Area

- U.S. Air Force, Landscape Design Guide, Walkways and Bikeways (Provides a comprehensive walkway and bikeway planning guide including sections on paving materials and gradients and curvature data).

- Chicago's Bike Lane Design Manual (Provides a comprehensive series of technical drawings and design specifications for bike lanes).

SECTION 10
LANDSCAPE DESIGN STANDARDS

10.1 INTRODUCTION

10.1.1 Landscape Design Standards include the selection, placement and maintenance of plant material on Hunter AAF. Landscape plantings provide a simple and cost effective enhancement to the general appearance of the installation.

10.1.2 The visual image conveyed by Hunter AAF is defined not just by architectural character and site organization, but also by attractive and well-designed landscape plantings. The presence of abundant plant material greatly enhances the visual character and environmental quality of the installation.

10.1.3 Landscape plantings add an element of human scale to open spaces and can be used functionally to screen undesirable views, buffer winds, visually reinforce the hierarchy of the circulation system and provide a visual transition between dissimilar land uses. Landscape plantings, in combination with stands of native vegetation, provide habitat for wildlife and shade and other environmental benefits for residents, employees and visitors.

Fig. 10.1 – Well-designed landscaping improves the visual environment for residents and employees.

10.2 LANDSCAPE OBJECTIVES

10.2.1 The overall purpose of the use of plant material at Hunter AAF is to improve the physical and psychological well-being of the people who live and work on the installation (Fig. 10.1). This is achieved by accomplishing the following objectives:

- Enhance soldier living and working areas, community services areas, the circulation system, family housing, command and administration areas and recreation facilities.
- Improve the overall visual quality of the installation by using landscape planting to:
  - Blend the built environment with the natural environment.
  - Provide scale and comfort to pedestrian environments.
  - Reinforce the hierarchy of the circulation system (Fig. 10.2).
  - Screen unsightly views or elements.
  - Buffer incompatible land uses.
  - Enhance antiterrorism capabilities.
- Emphasize the use of native plant varieties because many of them require less maintenance than introduced varieties and they blend developed areas with the natural environment on and off the installation (Fig. 10.3).

Fig. 10.2 - Landscaping reinforces the circulation hierarchy.

Fig. 10. 3 - Native plants are used to visually relate developed areas to the natural environment.

10.3 PRINCIPLES OF LANDSCAPE DEVELOPMENT

10.3.1 Landscape design is based on the following principles:

Unity

The selection and placement of plant material is used to blend, screen and soften incompatible architectural or other unattractive visual impacts. Plant material is used as a unifying element in front of a building or view to frame and enhance its visual effects. Repetition of a single plant type in a line or mass produces a strong visual line or volume in the landscape (Fig. 10.4).

Fig. 10.4 – Landscape design is used to unify complexes that include a variety of buildings.

Balance

Plant material is selected and placed to provide visual balance using either a symmetrical or an asymmetrical plant arrangement. Symmetrical plantings are generally used to produce a more formal appearance while asymmetrical plantings are used for informal or naturalistic designs (Fig. 10.5).

Fig. 10.5 – Trees are used to reinforce the balance of architectural forms.

Contrast

Plant material is selected and placed to provide variety in size and shape to add interest to the environment. Contrast can be expressed in the plants themselves when taller plants are located to provide a backdrop for lower plants, such as with placement of a hedge

behind a bed of annuals or perennials. Contrast can also be a function of the creation of alternating shade and sunlit areas (Fig. 10.6).

Fig. 10.6 - The contrast in color and texture between these two plants will increase as they mature.

Rhythm

Various sizes and shapes of plants planted in repeating sequences produce rhythm in the landscape. Rhythm is used to visually draw attention to specific elements in the landscape by leading the eye to the object with variations in height, shape, color and texture (Fig. 10.7).

Color and Texture

Plants are selected and placed according to their color and texture to provide visual interest (Fig 10.8). Colors are classified as either warm (red, orange, yellow) or cool (violet, blue, green). Textures are classified by degree, from coarse to fine.

Fig. 10.7 – Rhythm is developed between the trees, shrubs and columns along this barracks.

Simplicity

Landscape designs generally should be simple in form to limit the need for extensive maintenance (Fig. 10.9). Plant material in lawn areas should be grouped in beds with regular edges to facilitate mowing. Small turf areas should be avoided because of the difficulty of mowing. Because of the high maintenance required, planting of annual and perennial plants in beds should be limited in favor of flowering shrubs.

Fig. 10.8 – Variety in color and texture in groupings of plants adds interest.

Ultimate Effect

Landscape plans should be prepared with consideration for the mature size of all plants. The initial placement of plants should be based on nursery industry standards for expected mature height as well as spread. The relationship of the ultimate height of the plants to windows and other features should also be anticipated.

Fig. 10.9 – A simple design can provide interest and variety, but require only limited maintenance.

Spatial Articulation

Plants are selected and placed to create enclosed outdoor spaces or to separate adjacent spaces. They are also used to guide people as they move through the environment. The degree of visual enclosure, physical separation or movement is influenced by the density, form and type of plants used.

10.4 SUSTAINABLE LANDSCAPE DEVELOPMENT

10.4.1 The use of plant material on Hunter AAF promotes the sustainability of existing and new development (Fig. 10.10). In addition to aesthetic appeal, trees, shrubs, groundcover and vines:

- Provide habitat for wildlife
- Conserve energy
- Moderate climatic conditions
- Control erosion
- Purify the atmosphere
- Abate noise

10.4.2 Plant selection, installation and maintenance are to be accomplished following currently available sustainability guidance. In general, one of the key aspects governing sustainability is low maintenance. The following principles apply to landscape design, planting and grounds maintenance projects at Hunter AAF:

- Plant selection for low maintenance first involves determining which of the plants listed in Appendix O, Plant Palette are appropriate for a particular application. Second, the short list of potentially useful plants is analyzed relative to the particular circumstances of the project for which they will be used. From the short list, only the plants that would have the lowest requirements for water, pruning, pest control and cultivation may be specified and used on the project.
- Planting bed preparation specifications and practices, including any need for soil amendments, is to be evaluated for adherence to sustainability guidelines prior to bid or execution. The guiding principles to be followed are that a minimum of disturbance to existing vegetation occurs and minimal amounts of chemicals are added to the soil. To ensure that the soil conditions are fully known in advance, soil analysis will be undertaken sufficiently in advance to permit thorough consideration of sustainable approaches to improving soil conditions before planting.
- Landscape maintenance practices (including pruning, watering, fertilization, mowing, etc.) will be specified and carried out only after full consideration is given to the relative sustainability of the various practices available. The option of not conducting maintenance, although it is normally the least cost alternative in the short-term, must be cautiously applied because in most cases cost and time

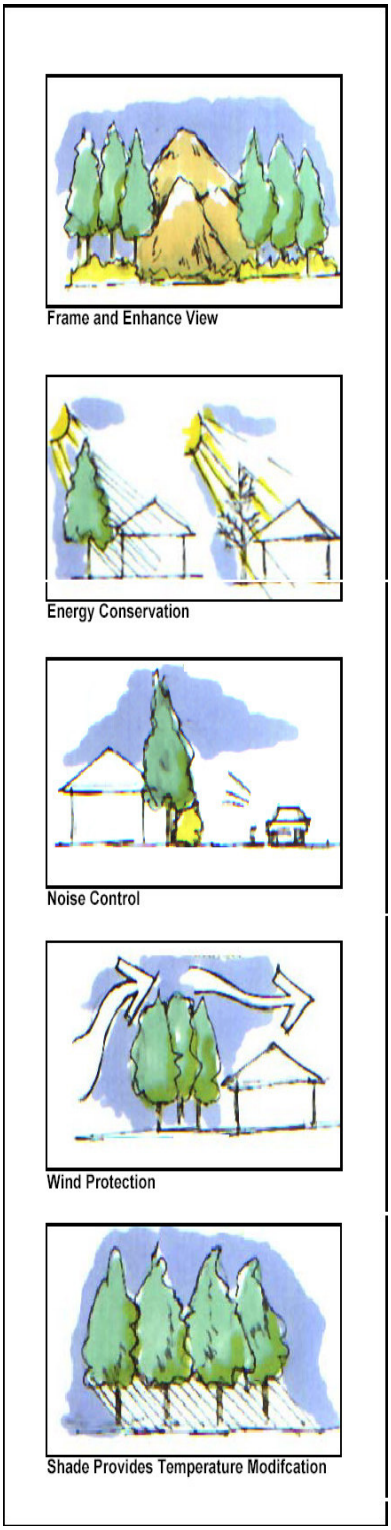

Fig. 10.10 - Landscape planting promotes sustainability.

requirements for deferred maintenance are disproportionately high.

- Integrated pest management is the preferred approach to be specified and implemented at Hunter AAF. This is a sustainable practice involving the use of continuous monitoring, minimal intervention and environmentally benign agents to control destructive peaks in pest populations.

10.5 LANDSCAPE DESIGN GUIDELINES

10.5.1 Proposed planting designs must be reviewed to ensure that site conditions (soil, topography, adjacent uses and architecture) and climatic criteria (sun, shade and moisture requirements) have been properly considered. The appropriateness of the landscape layout and the selection of plants must also take into account how the area will be used and who will use it. The design concept must also complement adjacent buildings, define outdoor space and control views. Landscape planting plans must be prepared by qualified personnel to provide quality assurance and promote design consistency within each visual zone.

10.5.2 The following paragraphs present landscaping guidelines for typical locations and uses of landscape planting:

Fig. 10.11 – Accent planting highlights the clinic entrance.

Foundation Planting

Foundation planting helps to integrate the building with its surroundings by introducing a bold visual element along the line where the building meets the ground. Normally composed of shrubs and small trees, this planting provides a green background for additional accent plantings in the foreground. Foundation planting is designed to add scale and character to the building, to help create a sense of arrival and to screen HVAC and other utilities. When developing plans for foundation planting, consideration should be given antiterrorism criteria and to the following design considerations:

- Focal and seasonal planting should be located at building entries for pedestrian interest (Fig. 10.11).
- The planting design and selection of plants should complement and reinforce the best architectural qualities of the building.
- Plants should not block windows and views from interior spaces.

- Trees should be setback from the building walls to provide space for mature growth and to prevent the root systems from damaging the foundation.
- Generally, symmetrical foundation planting design should be used for symmetrical buildings and asymmetrical designs should be used for asymmetrical buildings.
- Placement of flowering shrubs near building entrances should be avoided to minimize the possibility of insect problems (bee stings, etc.).

Screening

Screening plantings commonly incorporate evergreen shrubs and trees that branch to the ground, and are used for a variety of applications including the following:

- A combination of evergreen and deciduous trees can be used to provide protection from prevailing winds. Windbreak plantings should be irregular in form, rather than straight and evenly spaced, in order to provide more effective wind control and to visually blend with the natural areas of the installation.
- Masonry walls and fences that screen dumpsters may be further enhanced by shrubs of medium height and spread around the perimeter (Fig. 10.12). Dumpsters not screened by a fence or wall should be screened with taller and more dense shrubs so views of the dumpster are fully obscured.

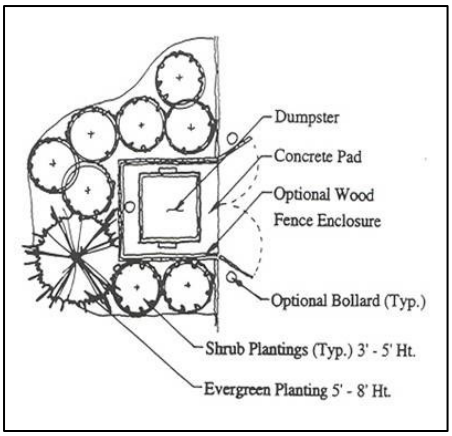

Fig. 10.12 – Planting around a dumpster reduces its negative effects.

Fig. 10.13 – Trees on the edge of green space buffers views of the adjacent Installation Support Visual Zone.

Buffer Planting

Buffer plantings using a mixture of evergreen and deciduous trees and shrubs should be used to visually separate incompatible land uses and to strengthen the visual separation between the Housing, Barracks, Town Center, National Guard and Installation Support visual zones (Fig. 10.13).

Open Space Planting

Open space areas are enhanced with planting to produce visual variety along the edges and to provide accent at specific locations within the space. Generally, evergreen trees are used around the perimeter to enclose the open space. Flowering trees and shrubs are planted inside and against the perimeter to add visual interest. Accent trees and shrubs are used in plantings within the open space to draw attention to specific features. Accent plants are placed in groups to increase their visual effect (Fig. 10.14).

Fig. 10.14 – Accent plantings near the Garrison Headquarters provides interest and expresses unit pride.

Street Trees

Overall, street trees are used to provide visual containment along streets and shade for the pavement, cars and pedestrians. Street tree varieties are selected for specific streets to visually reinforce the identity of the street within the hierarchy of the roadway system. Street trees, in combination with screening along parking lots, reduce the visual dominance of vehicles (Fig. 10.15). The following guidelines are used at Hunter AAF to ensure that street trees are properly selected and located for maximum effect:

Fig. 10.15 – View of an attractively screened parking lot.

- Plant deciduous street trees in single rows, along both sides of streets. Select large street trees for primary and secondary streets and medium street trees for tertiary routes. Use regularly spaced and uniformly shaped trees to provide a regimented appearance.
- Set trees 3 to 6 feet from the back of curbs. Spacing may be interrupted by driveways but the overall appearance should be as uniform as possible. New trees are spaced to conform to existing trees in a given block and to align with trees on the opposite side of the street when feasible.
- Coordinate street tree spacing with the layout of proposed street lighting so that light distribution will not be blocked as the tree grows.
- Locate trees at distances from intersections to avoid blocking views of oncoming cross-traffic. The appropriate distance is determined using the sight distance triangle in Figure 10.16.
- Use approved deciduous street trees that have been selected to be resistant to salt damage, do not lift pavement and have 10-foot to 12-foot clearance to the lowest branches. Approved trees are identified in Appendix O, Plant Palette. Weeping trees, trees with low branches and shrubs should not be planted in locations near intersections or driveways where they may block visibility of cross traffic or vehicles entering streets.

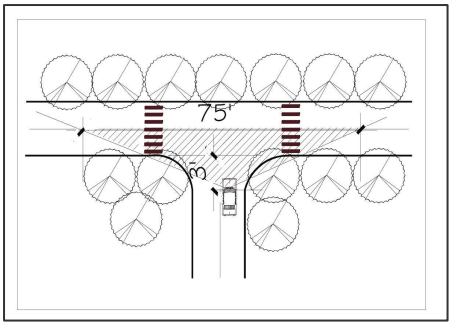

Fig. 10.16 – Keeping the sight distance triangle clear of obstructions enables intersecting drivers to see each other.

Parking Lot Planting

Parking lots are planted with trees and vegetative screening along the perimeter to improve their appearance, to help define circulation and to reduce heat gain during summer months (Fig. 10.17). The following guidelines are used at Hunter AAF in the design of landscaping for parking lots:

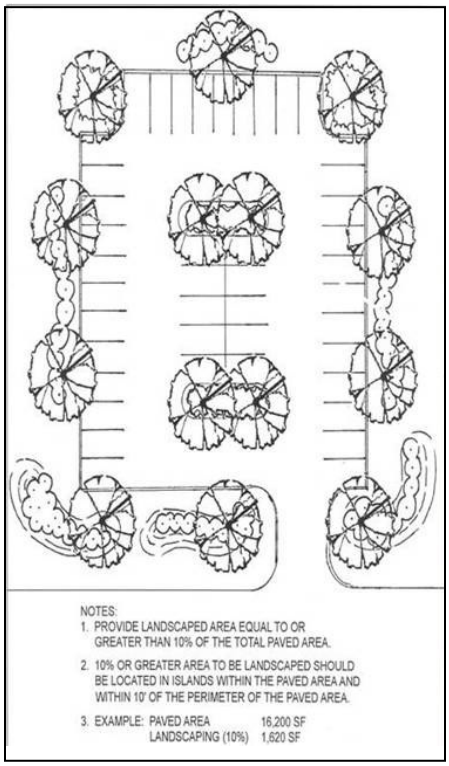

Fig. 10.17 - Provide parking lot planting to reduce heat gain.

- Shade trees are planted in and around parking lots to provide shade, reduce glare and moderate ambient air temperatures. Optimum spacing of parking lot shade trees

is 35 to 40 feet on center. Shade trees should be located with respect to the path of the sun so the maximum shade is cast on the pavement.

- Trees and shrubs are selected for their limited requirements for maintenance and their light-weight leaves that are not difficult to collect in the fall. Plants that produce fruit, nuts and other debris are avoided.
- Safe sight distances near entrances, exits and other circulation points must be considered when locating plants in a parking lot.
- Select trees, shrubs and ground covers that can withstand harsher conditions, such as sun, glare, heat and reduced water supply.
- Evergreen trees and shrubs may be mixed with deciduous plants to visually screen parking areas from adjacent uses.

Environmental Control Planting

Landscape plantings can provide environmental benefits, as well as addressing visual concerns. The following guidelines are used at Hunter AAF in the design of landscaping to achieve environmental control:

- Use deciduous trees and shrubs in courtyards, around building entrances and at places where people gather to provide shade, moderate temperatures and reduce glare (Fig. 10.18). The loss of leaves from these plants in the winter allows for these locations to be warmed by the sun.
- Use deciduous trees and shrubs on the southeast and southwest sides of buildings to shade the walls in the summer and open them to the sun in winter.
- Use mixed plantings of deciduous shrubs and evergreen trees and shrubs to provide sound and dust control along primary and secondary roads.

Fig. 10.18 – Trees shelter as well as visually accent building entrances.

Fig. 10.19 – The landscape image of Hunter AAF is created by the mix of native and planted vegetation.

Image Planting

The image of Hunter AAF is formed by the visual impressions that are created by the landscape and buildings on the installation (Fig. 10.19). The most highly visible locations that contribute to the image of the installation are the main gate and Headquarters area, the primary circulation routes and activity nodes such as the PX and Soldier Service Center. Features like static displays and signs that contribute to the installation image are improved by the incorporation of supporting landscape planting.

Entrances to the Installation

The landscape near entrances and the streetscape along entry roadways develop a strong visual image of the installation. The installation sign and the immediate areas around the Visitor Center and access control points (ACP) are landscaped and highlighted with accent plants to provide year-round visual interest. The following guidelines apply to landscaping at the gateways to Hunter AAF:

- The landscape design is integrated with the antiterrorism requirements of Section 12, Antiterrorism Design Standards.
- Low shrubs, groundcover, annual/perennial plants and canopy trees provide seasonal interest as well as maintain views required to ensure force protection measures.
- Large evergreen trees are not placed near the ACPs to avoid obstructing sightlines in the area and off the installation. Adequate lines of sight must be maintained for guard personnel to observe vehicular and pedestrian traffic approaching the gate.

Xeriscape

Xeriscape, conservation of water and energy through creative and adaptive landscape design, is encouraged at Hunter AAF. Xeriscape landscaping provides attractive solutions that save money, water and maintenance. The following websites provide guidance on specific design principles of the xeriscape design process and design application:

- University of Georgia, Cooperative Extension Service-Xeriscape, A Guide to Developing a Water-Wise Landscape
- USAF Landscape Design Guide, Xeriscape.

Zeroscape

Zeroscape landscaping, without plants, is not used at Hunter AAF because all areas that can be vegetated are, to compensate for the environmental impacts of the substantial areas that must be paved.

Irrigation

Irrigation is generally discouraged at Hunter AAF on the basis that landscaping, once established, should be able to thrive on the naturally available precipitation. Special circumstances where irrigation may be justified will be considered during project

planning and design for new projects. No retrofit of landscaping with irrigation is permitted without prior approval through the maintenance and self-help project review process.

10.6 PLANT MATERIAL SELECTION

10.6.1 Trees, shrubs, ground cover and turf are the major elements in a planting composition. Systematic use of plant selection criteria helps to create a unified composition; identify native plants; ensure low maintenance and sustainability; avoid incompatible colors, textures and forms; and match the appropriate plant to the land use and site conditions..

10.6.2 The ability of plant material to provide lasting benefit is dependent upon the survivability of the plants and their appropriateness to the site and use. Major factors affecting plant hardiness are soil type and organic content, temperature, moisture and light. These microclimatic conditions can be modified somewhat by the landscape design to create more favorable conditions to help the plants thrive.

Fig. 10.20 – Space plants according to their sizes when they mature.

10.6.3 The arrangement of plants in a composition to provide a specific display of form, color, texture, variety and accent over time depends upon an accurate understanding of how the available plants will relate to each other as they mature (Fig. 10.20). At the most basic level, there are five ways that plants are used as forms.

- Canopy
- Barrier (solid)
- Screen (less than solid)
- Groundcover
- Accent

10.7 PLANT CATEGORIES AND PLANT PALETTE

10.7.1 The plant categories and plant palette are designed to help the designer choose the best plant for project specific design requirements. The plants that appear on the list are selected for their ability to thrive in the Coastal Georgia geographical area and are approved for use at Hunter AAF. To use this information effectively, the design conditions of the specific project site must be thoroughly understood.

The Plant Categories

A select group of plant materials has been divided into the following six categories:

- Shade Trees
- Intermediate Trees
- Evergreen Trees
- Deciduous Shrubs
- Evergreen Shrubs
- Groundcover and Vines
- Grasses

Plant Palette

The Plant Palette is provided in a matrix format in Appendix O. The plants are listed in alphabetical order by category. Their botanical and common names are provided followed by a number of design characteristics, environmental requirements and functional uses.

10.8 PLANT MATERIAL INSTALLATION

10.8.1 A key step in assuring successful planting is to select plants of the highest quality. Plant material must comply with *American Standard for Nursery Stock* (ANSI Z60.1) which stipulates the appropriate relationships between plant characteristics such as height to spread, height to caliper of trunk, number of trunks for multi-stemmed plants, etc.

10.8.2 During design, locations of existing utility lines must be reviewed with DPW to ensure that conflicts during construction between excavations for plants and underground utilities are avoided.

10.8.3 The planting and establishment of trees, shrubs, ground covers, vines and turf are detailed in TM 5-803-13, Chapter 3.

10.8.4 The following are key steps in the successful planting of trees and shrubs:

- At planting time, thin plants by removing one-third of the vegetative material.
- Spray all evergreens with an antidesiccant within 24 hours of planting.

- Water all plants thoroughly during the first 24-hour period after planting.
- Site all plants and stakes plumb.

10.8.5 Additional information on installation techniques for turf is detailed in Unified Facilities Criteria (UFC) *3-210-05FA,* Design: Landscape Design and Planting Criteria, Chapter 4. The details cover the following topics:

- Site Evaluation
- Site Preparation
- Selection of Turf
- Maintenance Requirements

10.9 MAINTENANCE OF PLANT MATERIAL

10.9.1 Ease of maintenance should be one of the primary goals when developing planting designs for Hunter AAF.

10.9.2 Pruning is an important aspect of plant maintenance. In general plant material should be allowed to conform to its natural shape. This practice allows the plant to mature in a healthy manner and saves the time and energy required for trimming. The pruning of trees and shrubs is done to maintain plant health, direct plant growth, maintain a desired shape and increase flower or fruit development.

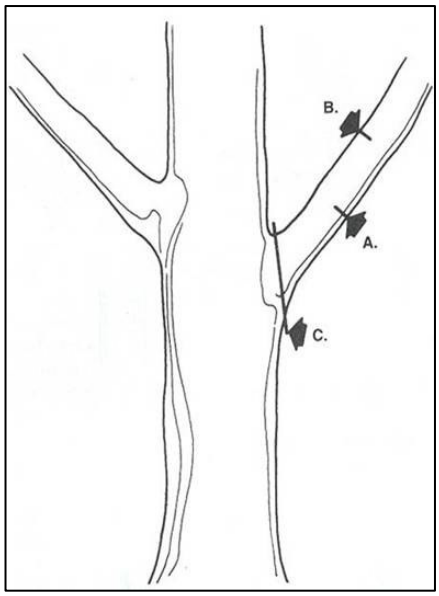

Fig. 10.21 – Three cuts are needed to cleanly prune a tree branch.

Pruning of Shrubs

The following principles apply to the pruning of shrubs:

- Do not prune shrubs flat across the top.
- Prune branches yearly on thick-branched shrubs and prune at the base of the shrub.
- Prune deciduous shrub stems as close to the ground as possible and branches as close to the stem as possible.
- When thinning out deciduous shrubs prune about one-third of all branches where they meet their main stem.

Pruning Trees

The following guidelines apply to the pruning of trees:

- Remove a large limb by making three cuts as described below. The first two cuts are necessary to remove the weight of the branch to allow the final cut to be clean, without ripping the bark (Fig. 10.21).

- Make the first cut at the bottom of the branch 12-24 inches from the branch attachment (Cut A, Fig 10.21).
- Make the second cut on the top of the branch within 1-inch of the undercut (Cut B, Fig 10.21).
- Make the final cut just beyond the outer portion of the branch collar (Cut C, Fig 10.21).

- Never cut the central leader of the tree.
- Prune coniferous evergreens trees, during the spring, by snipping off new growth. Avoid geometrically shaping plant material when pruning.

10.9.3 Mulch around the base of plants provides for greater moisture and helps inhibit the growth of weeds and grasses (Fig. 10.22). Mulching is done as follows:

- Mulch should be maintained at a depth of two to four inches.
- Mulch in the late spring, the best time for water conservation.
- Apply mulch immediately to new fall plantings.

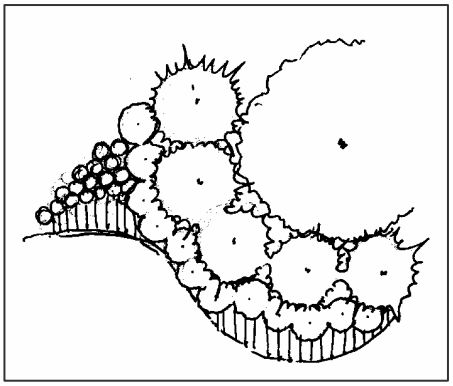

Fig. 10.22 – Group plants in mulched beds to reduce maintenance.

10.9.4 Ground cover plants do not require pruning, but they may be dug up in the spring or fall for propagation and to prevent overcrowding in their beds.

10.9.5 Landscape maintenance is best managed according to a carefully planned schedule. The general objective of a landscape maintenance schedule is to ensure an orderly and efficient care of the grounds. The landscape maintenance schedule in Appendix F identifies times throughout the year when specified maintenance should be undertaken. Use of the landscape maintenance schedule will improve all aspects of landscape on the installation. It will help organize the timely ordering of materials and supplies and the anticipation of manpower needs.

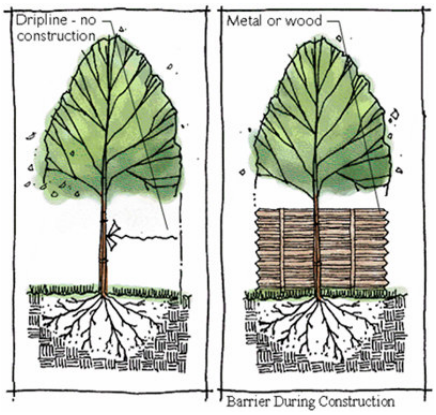

Fig 10.23 – Install a rigid barrier at the drip line to protect the tree and roots during construction.

10.10 TREE PROTECTION AND PRESERVATION

10.10.1 Existing trees and forest stands must be preserved if they are in good health. Construction must be planned to provide for the preservation of significant individual trees and groups of trees.

10.10.2 During the clearing and construction process, trees must be protected from damage. Construction barricades are erected to protect existing trees to be preserved. The barricades are located no closer to the trunk of the tree than the outer limits of the branches, or drip line (Fig. 10.23). In general, no excavation, filling, or storage of construction materials or vehicles is permitted inside the

barrier. Existing trees that cannot be preserved may be transplanted to a different location on-site or on a different site.

10.10.3 Changes in the grade of the soil around trees can cause extensive root damage and eventually death of the tree. To prevent damage to the tree, it is important to maintain the existing grade for at least the size of the tree canopy, within the drip line.

10.11 ANTITERRORISM CONSIDERATIONS

10.11.1 The presence of vegetation on an installation can have both beneficial and detrimental impacts on security. The selection and placement of landscape plant material on Hunter AAF is an integral element in the provision of protective measures to reduce the threat of terrorism.

10.11.2 Proper selection and placement of trees and shrubs is undertaken to provide visual screening without creating concealment for covert activity. The landscape architect responsible for tree placement should work closely with the Hunter AAF antiterrorism officer to design a landscape plan that provides visual screening without compromising antiterrorism measures (Fig. 10.24).

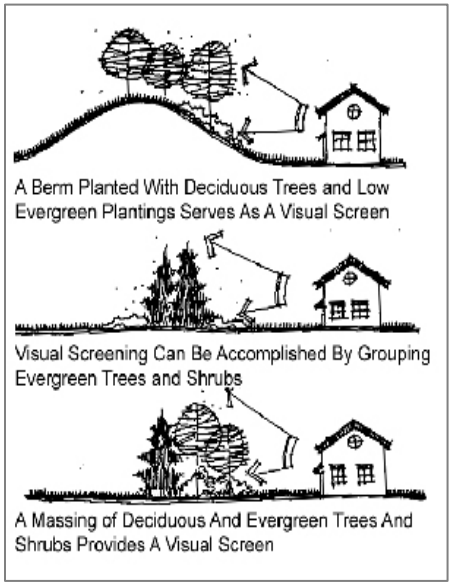

Fig. 10.24 – Tree buffers planted to obscure sight lines improve antiterrorism preparation.

10.11.3 The plant material must allow building occupants to see out, but must not allow outside forces to monitor interior activity. To accomplish this, the landscape architect should incorporate the following aspects into the design:

- Avoid conditions within 33 feet (10 meters) of inhabited structures that permit concealment of aggressors or obscure the view of objects or packages 6 inches (150-millimeters) in height from the view of security personnel. This results in the placement of shrubs and trees that are loose rather than dense in growth habit and possess multiple small stems rather than a single trunk that will obscure a 6 inch (150 mm) package.
- Plant material selection and placement shall minimize potential hiding places for bombs and aggressors.
- Provide vegetation screens for play areas and outdoor recreation areas to obscure from off-installation view.
- Use trees to obscure sight lines of on-installation buildings from off-installation buildings.
- Design vegetation groups properly to reduce blast effect.

10.12 ARMY STANDARDS

10.12.1 The following cited Army Standards shall be met.

- Army Regulation (AR) 420-70, *Buildings and Structures*
- Unified Facilities Criteria (UFC) *3-210-05FA,* Design: Landscape Design and Planting Criteria
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- American Standard for Nursery Stock, ANSI Z60.1

10.13 REFERENCES

10.13.1 The following references are provided for guidance.

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 10
- USAF Landscape Design Guide
- C. Brickell and D. Joyce. Pruning and Training, 1996.

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SECTION 11
SITE ELEMENTS DESIGN STANDARDS

11.1 INTRODUCTION

11.1.1 Site elements at Hunter AAF include all visible exterior elements that are considered utilitarian in use (Fig. 11.1). This section presents guidelines for approved site elements. The discussion about specific site elements below is organized under four categories:

- Site Furnishings
- Signs
- Lighting
- Utilities

11.1.2 Site elements selected for installation must be consistent with Hunter AAF design standards in order to reinforce the Southern Living Station of Choice theme. Proper selection of site elements will also include consideration for ease of maintenance and sustainability.

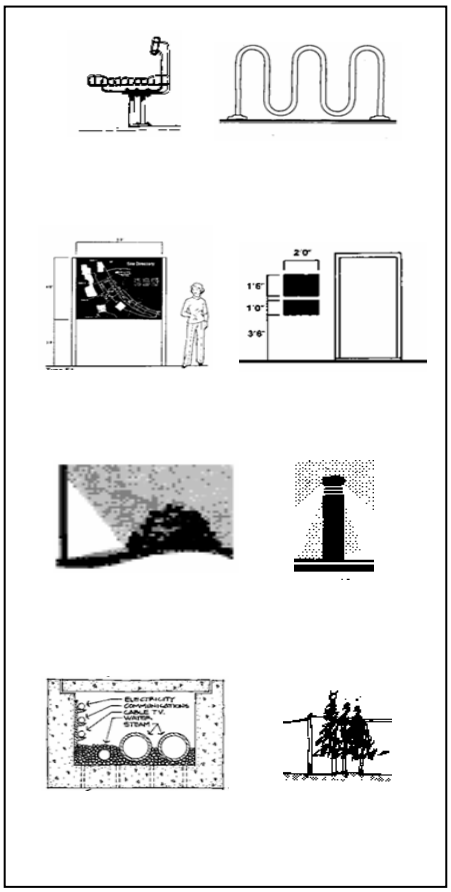

Fig. 11.1 – A sampling of common site elements.

11.2 SITE ELEMENT OBJECTIVES

11.2.1 Site elements are selected to effectively function as intended, enhance the visual quality of Hunter AAF and contribute to the sustainability of the installation. To accomplish these purposes site elements must meet the following objectives:

- Conform to established plans for the locations and types of site elements at Hunter AAF.

- Design site elements to support the image, character and scale of the Southern Living Station of Choice theme.
- Locate and design site elements to meet antiterrorism requirements.
- Design site elements to provide multiple uses (Fig. 11.2)
- Use recycled and salvaged materials wherever possible.
- Minimize maintenance and repair through the use of efficient products that are vandal-proof.
- Minimize negative visual and environmental impacts of utility systems.

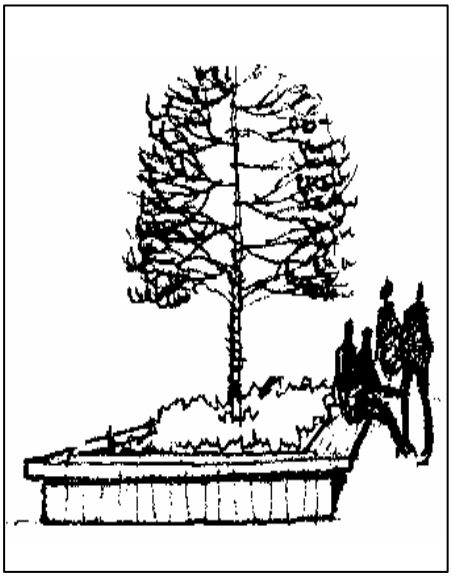

Fig. 11.2 - A planter can readily serve as bench and a vehicle barrier.

11.3 SITE FURNISHINGS

11.3.1 Site furnishings include all of the utilitarian outdoor amenities found at Hunter AAF. The term site furnishings refers to all of the utilitarian outdoor amenities found at Hunter AAF. These outdoor furnishings are provided to produce attractive places for outdoor activity and relaxation. All furnishings shall be accessible to, and usable by, persons with disabilities, in accordance with the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Uniform Federal Accessibility Standards (UFAS), with the most stringent standards to apply in the event of conflicts.

Fig. 11.3 - These attractive shelters provide shade and shelter from rain.

11.3.2 The Site Furnishings category includes the following sub-groups of elements which are discussed in detail below:

- Seating
- Tables
- Telephone Booths
- Shelters (Fig. 11.3)
- Kiosks
- Walls and Fences
- Trash Receptacles
- Dumpsters
- Flagpoles
- Planters
- Bicycle Racks
- Tree Grates
- Bollards

- Play Equipment
- Mailboxes
- Monuments, Memorials, Military Equipment Static Displays (Fig. 11.4)
- Drinking Fountains

11.3.3 Seating.

Seating includes benches and seating walls, as well as tables and movable chairs.

Fig. 11.4 - Static displays tell a story of mechanized combat at Hunter AAF.

Benches

- Bench Locations. Benches are to be located in areas of concentrated pedestrian use and arranged to encourage socialization within a pleasant outdoor setting. Ideal locations include intersections of walkways, major building entryways and courtyards and bus stops. Orient benches to give those sitting the best available view of the surroundings.
- Bench Installation. Benches are mounted on paved pads adjacent to walkways. Provide minimum clearance between the bench and edge of pad of two feet from adjacent sidewalks and five feet between the front of the bench and any stationary obstacle. Provide appropriate planting treatment for visual definition and seasonal shade.
- Bench Design. Benches with backs are used in areas where gathering, resting, eating and waiting are predominant uses. Benches without backs are used in recreation areas for players and spectators. For comfort and durability, the seats and backs should be made of wood or metal slats (Fig. 11.5). The standard bench length is six feet long but longer benches may be used for specific applications. Bench dimensions should meet specifications presented in the Technical Manual (TM) 5-803-5, *Installation Design Manual*, Fig. 2.5, page 8. Wall mounted benches should be similar in style and color to free standing benches. Supports are aluminum or stainless steel painted to match or complement the color of the seat.

Fig. 11.5 – An approved type of bench with contoured spring steel slats.

Seating Walls

- Seating Wall Location. Seating is incorporated into planter boxes or retaining walls, particularly at building entrance areas where the structures can serve as AT barriers. The locations of seating walls are integrated into the overall layout of features between parking and building entrances.

- Seating Wall Design. Seating walls used near buildings must be designed to complement the architecture. Seating walls should generally be between 18 inches and 22 inches high and 12 inches to 18 inches wide (Fig. 11.6) and designed to be comfortable and attractive as well as durable.

Fig. 11.6 - An example of a concrete seat wall.

11.3.4 Tables

Table Location. Locate tables alone or with seating in areas where people congregate to visit, eat, or work outside. Arrange the tables and seating so they can be used by more than one group of people. Groups of tables are placed in high use areas at recreation or food service facilities.

Table Installation. Tables that are heavily used are mounted on paved pads adjacent to walkways or building entrances or at a safe distance from athletic courts and fields. Trees or shelters are included to provide shade and protection from the elements.

Table Design. Tables are square or rectangular and have permanently connected seating. The table and seating surfaces are similar materials and design (Fig. 11.7). The table surface is resistant to corrosion, damage from rough use and splintering or chipping as it ages.

Fig. 11.7 - An attractive and durable wood substitute and metal table system.

11.3.5 Telephone Booths.

Telephone booths are being phased out at Hunter AAF. New pay phones are only installed inside buildings or mounted on building walls near the entrance.

11.3.6 Shelters.

Bus Shelters

- Bus Shelter Location. Bus shelters are located at designated bus stops in the Housing Visual Zone. Bus shelters are sited between the roadway and walkways that serve residents in the area.
- Bus Shelter Design. Bus shelters must provide protection from wind, rain and sun (Fig. 11.8) with an overhead roof and enclosures on three sides. Side enclosures should be constructed of a transparent, unbreakable type material to allow for adequate visibility. Bus shelters should have a minimum size of five feet by eight feet and minimum interior headroom of six feet six inches. Bus shelters must have a trash receptacle and ash tray either as integral fixtures or as separate elements sited with the shelter.

Fig. 11.8 - Bus shelters allow for adequate enclosure and ventilation but do not obscure those waiting.

Picnic Shelters

- Picnic Shelter Location. Picnic shelters are strategically located and sized for shared use to discourage the proliferation of small shelters scattered throughout the installation.
- Picnic Shelter Design. Picnic shelters are open on all sides to provide ventilation and visibility. The minimum size should be 20 feet square with a minimum 8-foot headroom at the eaves. Picnic shelters are constructed of wood and have wood or asphalt shingle roofing (Fig. 11.9).

Fig. 11.9 - Picnic shelters are rustic in appearance to blend into the recreations sites they serve.

Smoking Shelters

- Smoking Shelter Location. Smoking shelters may be located beside or behind buildings where personnel who smoke congregate. The shelter must be at least 50 feet from a building entrance and connected by a walkway or path.
- Smoking Shelter Design. Smoking shelters may be constructed of wood or synthetic materials and may be enclosed with screens or left open. These shelters should be rustic and framed with shrubs so they blend into the setting (Fig. 11.10). Prefabricated or kit smoking shelter designs must be approved prior to purchase to ensure that the quality and appearance is appropriate for its intended location.

Fig. 11.10 - A rustic smoking shelter blends into the landscape.

11.3.7 Kiosks

- Kiosks Location. Kiosks are used to display information at locations where pedestrians congregate. They will be used sparingly and only where they will be maintained and the information updated.
- Kiosk Installation. Except in recreation areas, mount kiosks on a concrete base adjacent to walkways. Allow a minimum of 3 feet of clearance on all sides.
- Kiosks Design. Kiosk design should blend compatibly with other site furnishings and with the architectural character of nearby buildings (Fig. 11.11).

Fig. 11.11 - Wood is an appropriate material for a kiosk in a recreation area.

11.3.8 Walls and Fences.

Walls and fencing are used to provide visual screening and privacy, to define pedestrian routes and to control vehicular access, as well as to provide security. Walls and fences must fulfill their function and visually harmonize with the character and appearance of other nearby elements and structures.

Walls

- Wall Location. Low walls are to be used to define pedestrian court areas and provide informal seating. Screening walls are used to screen building service areas. High walls are used to screen dumpster and mechanical equipment enclosures. Walls adjacent to walkways will be free of any projections, such as signs or drain pipes that would pose a hazard to passing pedestrians.
- Wall Design. Walls are constructed of concrete block with brick exterior veneer, or other material to match the adjacent permanent building (Fig. 11.12). Detail may be added to break-up the expanse of exterior brick on high walls. Enclosures are equipped with a black metal gate to secure the contents and to improve appearance. Screening and high walls must have a concrete, brick, or dark brown or bronze metal cap.

Fig. 11.12 - The brick veneer and concrete cap of this enclosure match the adjacent building.

Fences

- Fence Location. Fences are used to provide security for and to screen views of large service areas and utility yards. They are also used to provide privacy and to define outdoor spaces in recreation, retail, lodging and family housing areas. The perimeter fence at Hunter AAF defines the boundary between the installation and privately and publicly owned lands beyond and is highly visible to those living or driving nearby.
- Fence Design. The following four types of fencing are commonly used at Hunter AAF:
  - Perimeter fencing is constructed with brick-clad concrete block piers spanned with sections of black metal pickets (Fig. 11.13).
  - Security fencing may be chain link, but must be augmented with shrubs and trees to break-up views of long fence lines and broad areas of pavement (Fig. 11.14).
  - Screening fence may also be constructed of wood pickets fitted close together to preclude visibility of what is enclosed (Fig. 11.15).
  - Family housing yard fencing is constructed of black vinyl coated chain link with all mesh and structural members being coated (Fig. 11.16).

Fig. 11.13 – View of the standard perimeter fence for use in highly visible areas.

Fig. 11.14 – Trees and shrubs planted along a security fence screen unwanted views.

Fig. 11.15 – View of a simple wood screening fence enclosing utility equipment.

11.3.9 Trash Receptacles.

Trash receptacles are small, specially designed containers for the collection of refuse. They are periodically emptied by installation personnel into dumpsters that serve the individual facility.

- Trash Receptacle Location. Trash receptacles are intended to be highly visible and accessible so they function well for litter control. Trash receptacles are conveniently placed near seating and eating areas, in recreation areas near shelters or picnic tables, along walkways, at major pedestrian intersections and where walkways lead to buildings from parking lots, but not near the actual building entrance.
- Trash Receptacle Design. The following two types of trash receptacles are used outdoors at Hunter AAF:
  - Metal barrels trash receptacles are used throughout the Headquarters and Town Center visual zones. The metal barrel trash receptacle consists of an outer shell with an inner trash can (Fig. 11.17). The outer shell rests on the ground or is mounted on a pedestal anchored into the ground or pavement. The outer shell is composed of vertical metal staves approximately two inches in width separated by openings that are equal to approximately half the width of the staves. The internal trash can is removable for dumping and may be fitted with a plastic trash bag. The inner can is covered by a metal cap that insets and locks into the outer shell to prevent unauthorized removal of trash.
  - Wood barrel trash receptacles are used in all other visual zones at Hunter AAF. The wood barrel trash receptacle consists of an outer shell with an inner trash can (Fig. 11.18). The outer shell is mounted on a pedestal anchored into the ground or pavement. The outer shell is composed of vertical wood, or wood substitute, staves approximately two inches in width separated by openings that are equal to approximately half the width of the staves. The internal trash can is removable for dumping and may be fitted with a plastic trash bag. The inner can is covered by a metal cap that insets and locks into the outer shell to prevent unauthorized removal of trash.

Fig. 11.16 – Black chain link fencing encloses yards in family housing areas.

Fig. 11.17 – An example of a metal barrel trash receptacle.

11.3.10 Dumpsters.

A variety of dumpsters are used at Hunter AAF for the collection of trash and recyclable materials. Generally, each building or

compound has at least two or three dumpsters which are periodically emptied by installation personnel or contractors.

- Dumpster Location. Antiterrorism requirements restrict the location of dumpsters to a minimum of 33 feet (10 meters) from inhabited buildings and 82 feet (25 meters) from billeting and primary gathering areas (*Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1). Dumpsters may be placed closer to uninhabited buildings, but are required to be set back from roadways and walkways. Dumpsters inside the enclosure must be directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Dumpsters are placed on concrete pads with aprons large enough to encompass the bearing points of the service vehicle.
- Dumpster Enclosure Design. Dumpsters in the Headquarters, Town Center and Barracks visual zones must be screened from view by enclosing them in a permanent screening wall as described in Section 11.3.8. Dumpsters in the other visual zones may be enclosed by either a screening wall or a screening fence as described in Section 11.3.8. Dumpster enclosures must be oriented and designed as an integral part of the site plan for a facility. Provide a minimum three feet of clearance on each side between screen walls and dumpsters to allow adequate handler and truck access (Fig. 11.19). Concrete filled steel pipe bollards will be set inside the enclosure to protect the rear and side walls from being struck by dumpsters when being emptied and returned. Bollards will be painted yellow. Incorporate plantings around the screening walls to blend them into the overall landscape design for the site.

Fig. 11.18 – An example of the wood substitute barrel trash receptacle.

Fig. 11.19 – View of a large dumpster enclosure with metal gates.

11.3.11 Flag Pole.

- Flag Pole Location. Flag poles are installed at Hunter AAF only in specific locations authorized by the Garrison Commander. Contact the Master Planning Division to determine which organizations are pre-approved for flag poles and to initiate the review process for installing one.
- Flag Pole Design. The standard flagpole used at Hunter AAF will be tapered mill finish aluminum, fitted with a gold anodized finish ball finial (Figure 11.20). The flag pole will be mounted on a concrete base flush at grade. The base will be enclosed in a concrete pad that extends out a minimum of five feet to provide an area for the color guard

to stand. If the flag pole is located in a larger paved area, the concrete pad may be covered with the same paving materials as the surrounding area, except when that material is asphalt. Flag poles will include lighting and may be accented with well-maintained planting beds.

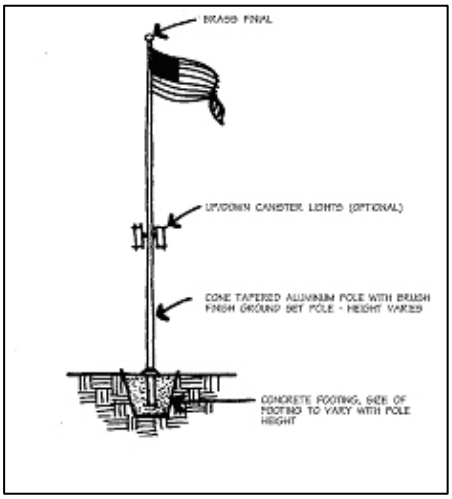

Fig. 11.20 – Sketch showing the basic components of a standard flag pole.

11.3.12 Planters.

Planters are used at Hunter AAF as vehicle barriers and to enhance the entrances of buildings with seasonal plantings. The locations and designs of planters are as follows:

Barrier Planter

- Barrier Planter Location. Barrier planters are set in groups or rows at an appropriate distance from a building wall or entrance to prevent a threatening vehicle from approaching.
- Barrier Planter Design. To resist the force of a large vehicle attempting to approach a building, barrier planters must be constructed of reinforced concrete and anchored to an underground foundation (Fig. 11.21).

Fig. 11.21 – A concrete barrier planter should be attractive, as well as effective in blocking vehicles.

Decorative Planter

- Decorative Planter Location. Decorative planters are used to accent a building entrance with seasonal plants and color (Fig. 11.22). Planters should be located so they block uninterrupted vehicular access to a building, but not so they excessively impede pedestrian movement. Several planters of various sizes should be grouped together to produce an aesthetically pleasing display.
- Decorative Planter Design. Planters may be made of terra cotta or cast concrete and may have a surface design or pattern. Planters may incorporate exposed aggregate in the exterior surface, but planters with brightly colored aggregate are discouraged. In any case the appearance of decorative planters must be coordinated with the design of the building, its entry and other site elements nearby.

Fig. 11.22 – An example of a commonly available decorative planter.

11.3.13 Bicycle Racks.

Bicycle racks are provided at destinations in the Housing, Town Center and Barracks visual zones.

- Bicycle Rack Location. Bicycle racks are installed between the parking lots and entrances of buildings they serve. Where possible, bicycle racks are located under the eaves or are sheltered by an extending portion of the building.

- Bicycle Rack Installation. Bicycle racks are placed on a concrete pad or other pavement associated with walkways approaching the building. The racks will be anchored to the pavement to ensure they remain in place and to protect the bicycles from theft.
- Bicycle Rack Design. Bicycle racks are constructed of durable metal pipe such as aluminum or iron (Fig. 11.23). Aluminum pipe will be anodized and iron pipe will be galvanized or have a factory applied powder coating. The color of bicycle racks near buildings will be coordinated with the color of that building and other nearby site elements.

Fig. 11.23 - A bicycle rack made of galvanized iron pipe.

11.3.14 Tree Grates.

- Tree Grate Location. Tree grates are to be used sparingly at Hunter AAF but may be needed to protect trees in large paved areas such as along the edge of pedestrian walkways.
- Tree Grate Installation. Tree grates and planting pits must be a minimum of five feet by five feet. The planting pit is ringed by a concrete footing for the grate or a metal frame that is included with the grate.
- Tree Grate Design. The design of tree grates will be coordinated with the architecture of the adjacent building and nearby site elements (Fig. 11.24). At a minimum, gaps in the tree grate walking surface must be wide enough to permit water and air through to the tree roots but narrow enough to eliminate risk of tripping or shoe soles being caught.

Fig. 11.24 - Tree grates must be simple in design and effective in protecting tree roots.

11.3.15 Bollards.

Bollards are used at Hunter AAF as vehicle barriers and as decorative elements or pedestrian walkway lighting.

Vehicular Barrier Bollards

There are two types of vehicle barrier bollards. One is an industrial bollard used in the Installation Support Visual Zone and in building service and utility areas throughout the installation. The other is an antiterrorism bollard that is used throughout the installation where buildings, building entrances and gathering places must be protected from vehicles.

- Vehicular Barrier Bollard Location. Vehicular barrier bollards are installed adjacent to buildings, loading docks, or utility equipment to fully protect them from being struck by trucks and other equipment (Fig. 11.25). Antiterrorism

bollards are located along the edges of roadways and parking lots to prevent a vehicle from lurching onto pedestrian walkways or into building walls and entrances.

- Vehicular Barrier Bollard Installation. Vehicular barrier bollards used within installation support and utility areas are buried directly in the ground with compacted crushed stone backfill or concrete. Pavement is then installed around them to produce a finished appearance. Antiterrorism bollards are installed on a steel pipe that is anchored in the ground by a poured concrete footing.
- Vehicular Barrier Bollard Design. Vehicular barrier bollards used within installation support and utility areas are made from steel pipe of various diameters filled with concrete that is finished with a dome at the top. These bollards are painted yellow to alert truck drivers or brown if they are in a green area. Antiterrorism bollards are made of a cast aluminum or steel shell that fits over a steel core (Fig. 11.26). Antiterrorism bollards are powder coated or anodized in a color that is coordinated with the architecture of adjacent buildings and other nearby site elements.

Fig. 11.25 – Vehicle barrier bollards protect this transformer.

Fig. 11.26 - A powder coated cast aluminum antiterrorism bollard.

Decorative Bollards

There are two types of decorative bollards. Both are used throughout the installation to define pedestrian areas or to provide low level lighting for pedestrian walkways.

- Decorative Bollard Location. Decorative bollards are located in straight rows or along a circular curve to mark the boundary between outdoor spaces of different uses. For example, bollards may be used between an area where tables are provided and an adjacent walkway that leads to a building entrance. Lighted bollards are placed along the edge of walkways that have no other lighting so that pedestrians are able to see their way. Lighted bollards may also be used in a manner similar to decorative bollards where the outdoor spaces will be frequently used at night.
- Decorative Bollard Installation. Decorative bollards are anchored to concrete pavement or to a concrete footing beneath other types of surface paving. Lighted bollards are set in a concrete footing that also contains the wire and junction box for the light fixture.
- Decorative Bollard Design. Decorative bollards will consist of either a single piece or an inner core and outer shell. The surface design and color will be coordinated with the design of adjacent buildings and other nearby site elements.

Lighted bollards will be Model Number DB6 manufactured by Dynamics Industries (Fig. 11.27). The lighted bollard is a specified item in the Hunter AAF electrical system privatization contract.

Fig. 11.27 - The lighted bollard approved for use at Hunter AAF.

11.3.16 Playgrounds/Tot Lots.

Playgrounds and tot lots at Hunter AAF will incorporate equipment that is suited for the age group or groups that are expected to use the facility. Two age groups are recognized as having differing equipment specifically designed for them; ages two to five and ages five to twelve (Fig. 11.28). Play equipment manufacturers' information will be evaluated by project designers to ensure that play equipment installed is consistent with this age group guideline.

- Playground Planning and Design. Guidance for planning and designing unsupervised outdoor play areas that meet child safety and child development requirements is found in the following publication; Unified Facilities Criteria (UFC) *3-210-04,* Design: Children's Outdoor Play Areas. The guidance given in this publication meets the needs of children with and without disabilities.
- Playground Inspection and Maintenance. A play area inspection and maintenance program for Child Development Centers can be found in Technical Manual (TM) 5-663, *Child Development Center, Play Area Inspection and Maintenance Program*.
- Recalled and Banned Playground Equipment. For updates on banned or recalled playground equipment consult the Consumer Product Safety Commission Press Releases and Recalls web site.

Fig. 11.28 – An example of play equipment for the two to five year old age group.

11.3.17 Monuments, Memorials and Military Equipment Static Displays.

- Monument and Display Location. Monuments and static displays must be carefully designed and approved by the Garrison Commander prior to installation. It is in the interest of Hunter AAF as a whole to have monuments and static displays to be consolidated in specific locations to create an orderly presentation of artifacts that are of significance to the entire 3rd ID.
- Monument and Display Design. Proposals for memorials must conform to the guidance set forth in Army Regulation (AR) 1-33, *Memorial Programs*.

11.3.18 Drinking Fountains.

Outdoor drinking fountains are not generally permitted on Hunter AAF, except to support larger playgrounds, outdoor recreation facility complexes and outlying recreation areas if convenient to a potable water supply line. When drinking fountains are installed, they must be of high quality cast or forged metal and must be self-winterizing. Steps must be provided for children, and the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Uniform Federal Accessibility Standards (UFAS) standards must be meet.

11.4 SIGNS

11.4.1 Signs are used to visually communicate information. They are highly visible features that must be attractive and compatible with their surroundings. Careful consideration must be given to what a sign says, how it is said, its visual appearance and organization, its location, structural support system and relation to other signs on Hunter AAF. A standardized signage system is in-force at Hunter AAF to facilitate movement, provide a sense of orientation and reinforce standards of excellence. Signage creates a unifying element throughout the installation that visually ties the installation themes together and builds a reference and continuity that translates into confidence and reassurance when traveling throughout the installation. The standards to apply for signage color, type and sizing is found in Technical Manual (TM) 5-807-10, *Signage*.

11.4.2 Sign System Characteristics.

There are several basic design characteristics that, by serving to convey necessary information clearly and attractively, are an integral part of any successful signage system.

Simplicity
An effective strategy provides only needed information, avoids redundancy and eliminates over-signing with resultant clutter and visual confusion. Sign messages must be clear, simple and easy for motorists to process quickly.

Continuity
It is essential that the system be applied uniformly and consistently throughout the entire installation. The importance of consistent implementation extends from the larger issues of sign type and size down to accurate color continuity and matching typestyles.

Visibility
Sign location is a very important ingredient within the system. Signs must be located at significant decision points and oriented to provide clear sight lines for the intended user. Close coordination of locations with respect to landscaping, utilities, adjacent signage and various other street design elements is important to ensure long-term maximum visibility.

Legibility
Sign typestyle, line spacing, color and size all combine to create the crucial design characteristics of legibility. This aspect of sign design takes into consideration users such as motorists, pedestrians, or bicyclists and the relative travel speed at which each type of user will be traveling when viewing the signs.

11.4.3 Vocabulary of Communication.

A common language is used in the established signing system. The different components that create the sign package are named and referred to within the total signing system.

11.4.4 Visual Hierarchy.

System
The entire signing system communicates, through a range of sign and typestyle sizes, the relative importance of the individual activity that the sign identifies. The system follows a logical progression from a point of origin to the desired destination.

Ranking
A stated ranking method supports the visual standard of hierarchy within the signing system. Signs can be organized within assigned classes with emphasis on the function and image of the installation.

Class
Within each class, the level of architectural influence evokes the importance of the sign to the installation. This is also critical to the idea of progression. The importance of a sign must be presented in its size and level of detail.

Scale
As individuals move closer to their destination on the installation, the scale of the sign becomes progressively smaller and the level of the message more detailed.

11.4.5 Design Characteristics of Specific Types of Signs.

Installation Identification Signs
Installation identification signs name the installation and display the official US Army insignia. The designation "United States Army" must appear at the top of the sign in accordance with AR 420-70, para 2-7h. Every installation entrance shall have an installation identification sign displaying only the US Army plaque, with the words "United States Army, Hunter AAF" and gate name. The placement of Senior Mission Commander logo, unit crest and other installation identification signs, monuments, or displays shall be located inside the installation beyond the cleared area of the Access Control Point (ACP) of entry. When used service-wide, these signs convey a uniform image of strength and stability to the public. Emblems, branch colors, unit mottos, names and titles of individuals are not to be displayed.

- Installation identification signs consist of three types:
  - Sign type A1, main entrance sign, identifies the principal visitor entrance.
  - Sign type A2, secondary entrance sign, identifies entry points with relatively high volumes of visitor traffic.
  - Sign type A3, limited access entry gate signs, identifies entry points with limited public access.

See Technical Manual (TM) 5-807-10, Signage, paragraph 3-3, for sign specifications and paragraph 3-11 for sign placement guidelines.

Directional, Informational and Facility Identification Signs
The following standards apply to all signs that are installed for areas and individual buildings on Hunter AAF:

- **Typeface**: Lettering is self-adhesive backing material.
  - Building Title: Helvetica Medium, Upper and lower case
  - Building Numbers: Helvetica Regular
  - Building Addresses: Helvetica Medium, Upper and lower case
- **Color**:
  - Panel: Dark Brown
  - Lettering: White
  - Post: Dark Brown
  - Exposed panel backs and edges: Dark Brown
  - All paint: Semi gloss

- **Materials**:
  - Panel: Double-face 1/8” thick aluminum
  - Post: Steel Pipe
  - Foundation: Concrete pier or direct burial

- **Street Addresses.** The addressing procedures prescribed in DoD 4525.8-M, DoD Official Mail Manual are mandatory for use by all DoD components. DoD 4525.8-M, Chapter 3 prescribes the following:
  - All DoD addresses shall be assigned so they are compatible with the United States Postal Services automated delivery point sequencing (C3.3).
  - The DoD installation is responsible for assigning city-style, street address on the installation (C3.3.2.2).
  - Street addresses shall be assigned and used even though a DoD activity may deliver the mail to the addressee (C3.3.2.2.1).
  - Only geographically locatable civilian-style street addresses (Fig. 11.29) shall be used (C3.3.2.2.4).
  - Installations shall not use one street address for the entire installation and then use secondary unit designators such as "Building 123" to designate the delivery addresses on the installation (C3.3.2.2.5).
  - Addresses such as "Building 123 Roberts Street" are not a valid address format and shall not be used (C3.3.2.2.6).
  - The Hunter AAF Directorate of Information Management (DOIM) is responsible for assigning street addresses to buildings. See attached listing of assigned building addresses.

Fig. 11.29 –Street addresses are used on all building identification signs.

Brigade, Battalion and Company Headquarters Signs

TM 5-807-10 must be followed for any specifics not covered here.

Notes:

All figures and paragraphs referenced in the following can be found in TM 5-807-10.

Building numbers as described in TM 5-807-10 will not be placed on building identification signs

Building addresses will be placed on all building identification signs where the building numbers were once placed.

Military headquarters identification signs consist of the four types listed below. Graphics appear on both sides of these signs, since they are placed perpendicular to the road and can be viewed by traffic moving in both directions.

Sign Type B1 Installation headquarters signs identify the central administration buildings of the installation.

Sign Type B2 Command, division and brigade headquarters signs.

Sign Type B3 Battalion headquarters sign.

Sign Type B4 Headquarters building entrance sign, identifies the building entrance for all levels of authority. In addition, type B4 is used to identify a unit headquarters that has a special entry point other than the main entrance of a building.

Headquarters Facilities

Sign Type B1 signs are used to identify the headquarters facilities of the installation. When the headquarters of a command or division level organization is located in the same facility as the installation headquarters, the unit name is placed below the installation name. In addition, the authorized insignia of the command or division level unit is located to the left of the unit name.

(1) Colors. White letters and numbers on standard brown background; full-color insignia.

(2) Sign grid specifications.

(a) Dimensions. 3ft-6in. H x 8ft-0in. W.

(b) Message. Installation name—upper and lower case Helvetica medium, 6-inch capital letter height, flush left. Average line length-21 characters per line. “Headquarters” — upper and lower case Helvetica regular, 6-inch capital letter height, flush left. Average line length—24 characters per line. Command or division level name—upper and lower case Helvetica medium, 4-inch capital letter height, flush left. Average line length-27 characters per line.

(c) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

(d) Insignia. Authorized military insignia, 12-inch maximum height x 8-inch maximum width,

flush to left of grid box and centered on the brigade name.

Brigade Headquarters

Sign Type B2 signs are used to identify the headquarters facilities of command, division and brigade level organizations. The authorized shoulder sleeve insignia or distinctive unit insignia for each command or division is located to the left of the unit name. Brigade level organizations show the name of the command or division under which each serves below the unit name, and display the command or division insignia to the left of the unit name. Only one headquarter unit is identified per sign.

(1) Colors. White letters and numbers on standard brown background; full-color insignia (Fig. 11.30).

(2) Sign grid specifications.

(a) Dimensions. 4ft-0in. H x 6ft-0in. W.

(b) Message. Unit name-upper and lower case Helvetica bold, 4-inch capital letter height, flush left. Average line length-l 7 characters per line. "Headquarters" —upper and lower case Helvetica regular, 4-inch capital letter height, flush left. Average line length-25 characters per line.

(c) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

(d) Insignia. Authorized military insignia, 12-inch maximum height x 8-inch maximum width, flush to top of grid box and centered.

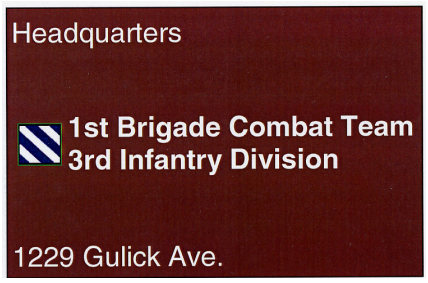

Fig. 11.30 – A sample brigade headquarters sign.

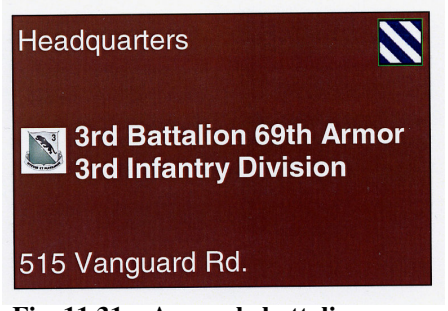

Fig. 11.31 – A sample battalion headquarters sign.

Battalion Headquarters

Sign Type B3 signs are used to identify the headquarters facilities of battalion level organizations. The name of the command or division under which each serves is shown below the unit name. The authorized branch color(s) of the unit is located to the left of the unit name. Battalion headquarters signs do not display the command or division level organizational insignia. If more than one (1) battalion headquarters is located in a specific building all unit names will be displayed on one (1) sign.

(1) Colors. White letters and numbers on standard brown background; full-color symbol (Fig. 11.31).

(2) Sign grid specifications.

(a) Dimensions. 3ft-6in. H x 5ft-0in. W.

(b) Message. Unit name-upper and lower case Helvetica medium, 3-inch capital letter height, flush left. Average line length—20 characters per line. “Headquarters"— upper and lower case Helvetica regular, 4-inch capital letter height, flush left. Average line length—22 characters per line.

(c) Symbol. 6-inch diameter overall, 1/4 –inch perimeter ring in white, 1-inch border ring in secondary branch color.

(d) Building address. Upper and lower case Helvetica medium, 4-inch capital letter height, flush left.

Company Headquarters

Most company operations facilities contain more than one company headquarters unit. When more than one company Headquarters unit is located in a specific building all units will be listed on an individual sign. Sign specifications are as follows:

Facilities with One Company Headquarters Unit

Type C4 signs. Insignias, branch colors, unit mottos, names or titles of individuals are not recommended on company level unit signs.

(1) Colors. White letters and numbers on standard brown background.

(2) Sign grid specifications.

(a) Dimensions. 4ft-0in. H x 5ft-0in. W.

(b) Message. Facility and unit name-upper and lower case Helvetica medium, 3-inch capital letter height, flush left. Average line length-25 characters per line.

(c) *Building address.* Upper and lower case Helvetica medium, 3-inch capital letter height, flush left.

Facilities with More Than One Company Headquarters Unit

Type C2 signs. Sign Type C2 will be used with the extended grid specifications listed below. Insignias, branch colors, unit mottos, names or titles of

individuals are not recommended on company level unit signs

(1) Colors. White letters and numbers on standard brown background (Fig. 11.32).

(2) Sign grid specifications.

(a) Dimensions. 4ft-0in. H x 5ft-0in. W.

(b) Message. Unit facility and name—upper and lower case Helvetica medium 4-inch capital letter height, flush left. Average line length-19 characters per line. Sub-service name-upper and lower case Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.

(c) Building number. Helvetica regular, 4-inch number height, flush left.

(4) Extended sign grid specifications.

(a) Dimensions. 5ft-6in. H x 5ft-0in. W.

(b) Message. Military unit name-upper and lower case Helvetica medium, 4-inch capital letter height, flush left. Average line length—19 characters per line. Sub-unit name-upper and lower case Helvetica regular, 3-inch capital letter height, flush left. Average line length-30 characters per line.

(c) Building number. Helvetica regular, 4-inch number height, flush left.

Note: If companies or detachments are co-located in the same facility with battalion or higher headquarters units, all units will be listed on the facility identification sign of the type associated with the highest echelon unit.

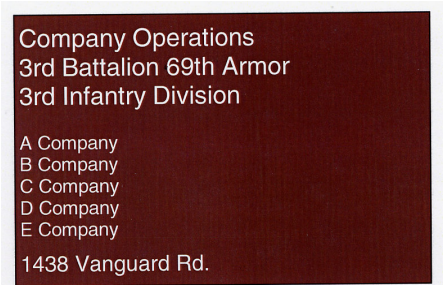

Fig. 11.32 – A sample company headquarters sign for multiple companies.

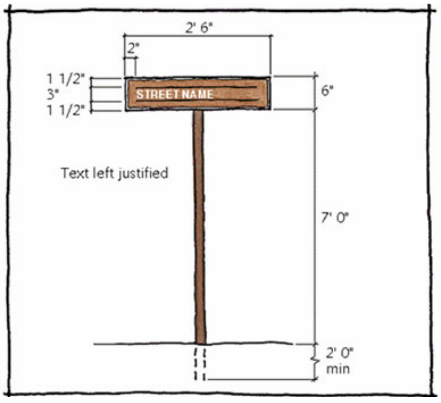

Fig. 11.33 - Dimensions of a typical street sign.

Street Signs

Street name identification signs should be designed with the same lettering, color and materials as other information signs (Fig. 11.33).

Housing Area Signs

The sign will be complimentary to the architectural setting of the housing area and approved by Master Planning. Housing numbers are placed on each house where lighting will effectively light the numbering.

Directional Signs

Directional signs are placed in central locations and at major decision points along circulation routes. These signs guide the motorist or pedestrian in, around and out of the installation (Fig. 11.34). The legibility and placement of these signs, as well as the ordering of information, is critical to their effectiveness. Messages will be grouped in the following order according to their arrow direction: forward, left and right. Placement of the message on the sign panel is determined by the arrow direction. Destinations forward and left are listed first and have flush left messages. Destinations right are listed next and have flush right messages. The arrow is centered in the space between the message and the edge of the sign (Fig. 11.35). Prioritize destinations to be listed by giving the highest priority to the destinations that are most often sought by people new to the garrison or that serve as highly visible landmarks on the garrison. Those who live or work on the garrison or who visit frequently do not need the degree of help required by a first time or infrequent visitor. These signs are designed to include the following:

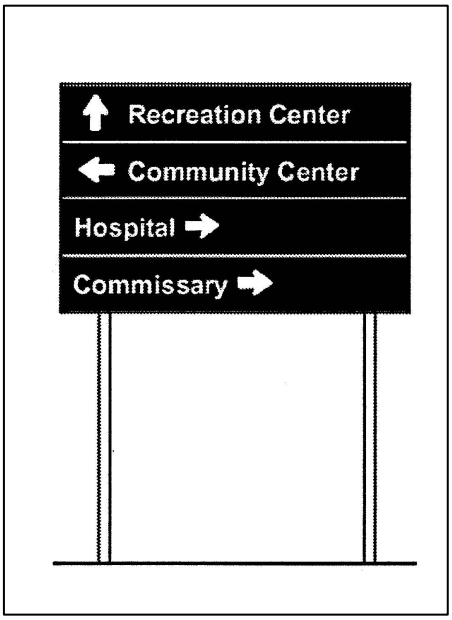

Fig. 11.34 – A diagram showing typical arrangement of arrows and names on a directional sign.

Regulatory Signs

Regulatory signs provide the rules for travel and parking on Hunter AAF. Included are speed signs, turning and lane use signs, warning signs, parking control signs, etc. (Fig. 11.36). Related to these signs are pavement markings and traffic signals.

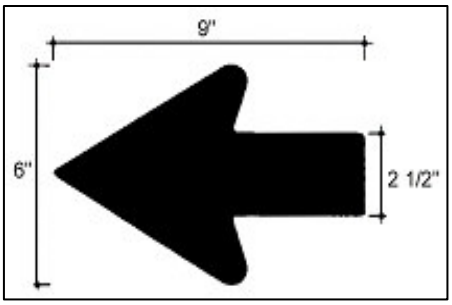

Fig. 11.35 - Dimensions of the arrow to be used on directional signs.

Traffic Control Signs

National highway standards will be used for signs to regulate vehicular traffic on Hunter AAF (AR 420-72, Transportation Infrastructure and Dams, Para 2-15f). These standards are described in the Manual of Uniform Traffic Control Devices (MUTCD). Also see MTMC Pamphlet 55-14, Traffic Engineering for Better Signs and Markings. This pamphlet clarifies existing standards and provides definite guidelines for installation officials to conform to the MUTCD. These standards shall be used installation wide to include installation Access Control Points.

Prohibitory (Warning) Signs

This category of signage is intended to maintain security and safety on the installation perimeter and at other specific secure areas. These signs notify visitors of restrictions, as well as other security procedures. The guidelines for design, fabrication and placement of warning signs are found in Technical Manual (TM) 5-807-10, Signage, paragraph 3-9.

Electronic Exterior Signs

All exterior flashing signs, traveling lights, or signs animated by lights of changing degrees of intensity or color are prohibited. Wheeled electrical signs will have an attractive presentation. Temporary landscape elements should be used whenever possible. The siting of this type of sign will be approved by Master Planning. No sign of this type will be left in place for longer than six months. After which time, the sign will be removed or turned into a permanent sign.

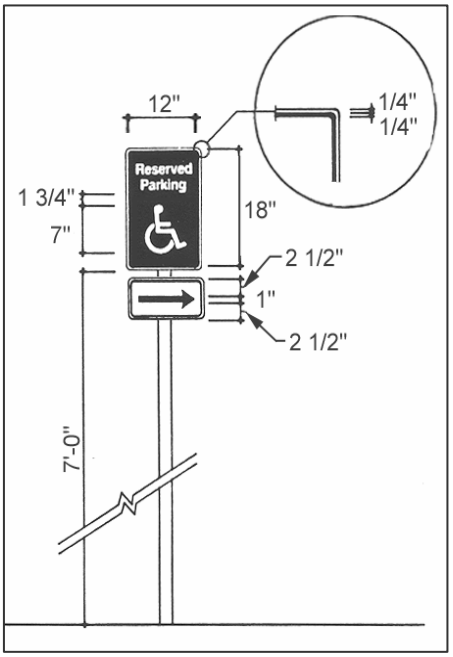

Fig. 11.36 – Dimensions for a regulatory sign.

11.4.6 Sign Placement

Placement of signs differs according to the type of sign and the specific site constraints. The following guidelines apply to placement of the majority of signs:

- Do not place more than one sign at any location. Traffic rules are the exception to this rule.
- Place signs in areas free of visual clutter and landscape materials.
- Place signs in locations that allow enough time for the user to read and react to the message.
- Signs must not be placed such that they block sight lines at intersections.
- Place signs approximately 4 feet (1.2 meters) above ground level to be within 10 degrees the driver's line of vision (Fig. 11.37). Provide proper placement to avoid a hazard to children.

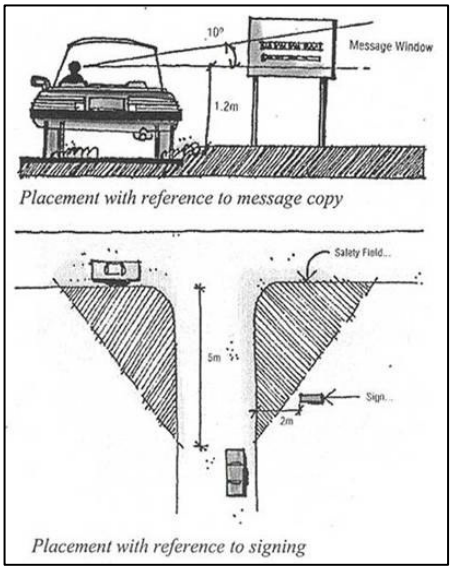

Fig. 11.37 - Placement of signs is critical to ensure easy readability.

11.4.7 Sign System Typography.

Military Emblems

The Army has a rich tradition of military heraldry. Military emblems are an important part of the soldiers' identity and the emblems have been carefully crafted over the years to express unit pride and unique history and function of the unit. The care and use of organizational emblems in a signage system can add visual interest as well as build pride and a sense of history. However, the overuse of miscellaneous emblems can lead to clutter and a dilution of their importance. Colors for military emblems must be in accordance with the Institute of Heraldry.

Department of the Army Plaque

The plaque should be displayed on installation identification signage to emphasize the heritage and professionalism of the United States Army. The design of the plaque must be in accordance with Army Regulation (AR) 840-1, Department of the

Army Seal, and Department of the Army Emblem and Branch of Service Plaques and must be reproduced in full color.

Insignias
The use of branch insignia, shoulder sleeve insignia, coat of arms and/or distinctive insignia on headquarters signs is permitted. All military emblems must appear in full color. Motivational symbols or motifs will not be used.

11.4.8 Reduce Visual Clutter.

Over-signing detracts from a uniform sign system and if left uncontrolled will eventually destroy the integrity of the system.

Clutter creates confusion and ineffectiveness. Often motorist and pedestrians are confused by the bombardment of messages that have no relationship to each other, or the communication is on such a minimal level that the sign serves no purpose.

11.5 LIGHTING

11.5.1 Lighting is a functional requirement of installations that also impacts the visual environment. The site lighting system conveys a sense of order and organization, as well as providing safety.

11.5.2 The lighting system provides the proper type of lighting for different lighting requirements and locations.

11.5.3 All lighting must be located and selected to prevent undesirable spillover of light into other areas. Spotlights or area lights mounted on buildings must be aimed or screened to prevent glare that could blind motorists or pedestrians or light sleeping areas.

11.5.4 Light Fixtures.

The following five types of lighting fixtures will be permitted for site lighting on Hunter AAF. Selection criteria are included with each lighting type.

Standard Cobrahead Fixture Cut-Off

a) Description (Fig. 11.38)
   i) **GE M-250R** and **GE M-400** series cobrahead fixture, gray
   ii) Cut-Off optics

Fig. 11.38 - Photograph of the standard cobrahead fixture.

b) Use

i) Recommended for use along roadways where aesthetics are not of primary concern.

c) Available Types/Wattage

i) MH: 250W 400W

Premium Cobrahead Fixture Cut-Off

a) Description (Fig. 11.39)

i) **GE M-250R** and **GE M-400** series cobrahead fixture, bronze

ii) Cut-Off optics

b) Use

i) Recommended for use in non-residential areas where aesthetics are not of primary concern.

c) Available Types/Wattage

i) MH: 250W 400W

Fig. 11.39 - Photograph of the premium cobrahead fixture.

Shoebox Fixture

a) Description (Fig. 11.40)

i) **GE Decashield** shoebox fixtures, bark Bronze

ii) Cut-Off optics

b) Use

i) Recommended for use along roadways or in parking lots where large amounts of light are desired and aesthetics is of primary concern.

c) Available Types/Wattage

i) MH: 250W 400W

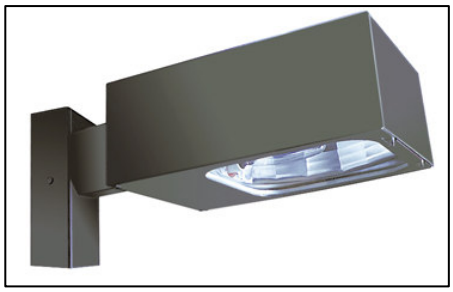

Fig. 11.40 - Photograph of the approved shoebox fixture.

Post Top Light Fixture

a) Description (Fig. 11.41)

i) **General Electric Salem Series** post top light, dark bronze

ii) Cut-Off optics

b) Use

i) Recommended for use in residential or community areas subject to high likelihood of damage.

c) Available Types/Wattage

i) MH: 70W 150W

Fig. 11.41 - Photograph of the Salem Series post top light.

Bollard Light

a) Description (Fig. 11.42)
   i) **Dynamics DB6** series bollard light with rounded top.
b) Use
   i) Recommended for use along sidewalks where minimum amounts of light are desired to illuminate walkways with small amounts of light trespass.
c) Available Types/Wattage
   i) MH: 70W

Fig. 11.42 - Photograph of the approved bollard light.

11.6 UTILITIES

11.6.1 Utility systems provide the basic infrastructure of power, communication, water and sewer services necessary for the operation of Hunter AAF. Utilities also play a key role in the visual quality of the installation. Their primary impact on the visual quality is the result of the clutter of overhead utility lines and poorly designed storm drainage systems.

11.6.2 The visual and environmental impact of utilities must be minimized wherever practical (Fig. 11.43). New utility systems must be designed to minimize maintenance and repair. The result is a more sustainable utility system that will promote the overall sustainability of the installation. The primary components of the utility system that tend to produce negative visual effects are below along with recommendations of how the negative effects will be minimized:

Fig. 11.43 - Routing transmission lines in wooded areas reduces their visibility.

Overhead Transmission Lines

Unsightly overhead utilities must be relocated underground wherever possible to reduce negative visual impacts and reduce maintenance and repair requirements. Underground utilities are also desirable for protection from terrorist or other enemy attack. When underground locations are not possible, the negative visual impacts should be minimized by using the following design techniques:

- Overhead Transmission Line Location. Overhead transmission lines should be aligned along edges of land use areas to avoid dividing an area and creating gaps or unusable areas. They should conform to natural landforms that can be utilized to screen them from public view. Hills should be crossed obliquely rather than at right angles.

Alignments along hillcrests or steep grades should be avoided.

- View Screening. Minimize long views or silhouette views of overhead transmission lines from along roads and other public viewing areas. Avoid the "tunnel effect" of long, straight, uninterrupted views along the alignment by clearing vegetation only within the right-of-way that threatens the overhead lines. Jog the alignment of utility lines at road crossings and periodically undulate lines of plants installed along the edges of the right-of-way.

Fig. 11.44 - Well-placed trees and shrubs of the appropriate types reduce the visibility of distribution lines.

11.6.3 Distribution Lines.

Power distribution lines should also be located underground to minimize negative visual impact, reduce maintenance and protect from terrorist or other enemy attack. If overhead, they should be located out of view from main public visibility areas or screened to be as unobtrusive as possible (Fig. 11.44). Avoid alignments of overhead lines along major circulation corridors. Use minor streets, alleyways, rear lot lines and vegetation or topography that provide screening and minimize visual impact. Minimize the number of poles and pole height and use poles that blend into their surroundings to reduce visual impact. Poles should also be multi-functional for power, telephone, cable television, street lighting, etc., to reduce visual clutter.

11.6.4 Substations and Transformers.

Substations and transformers must be designed and located to minimize their visual impact and be compatible with the character of their setting. Substations are best located in the Installation Support or Green Space visual zones and away from where they will be seen from primary roadways, parks, family housing and trails. If they are located in visible areas, they must be screened by plant material, berms and walls.

11.6.6 Sewer and Water.

The following guidelines for sewer and water utilities are in effect at Hunter AAF:

- All sewer and water lines will be underground.
- Sewage treatment facilities will be located 1,250 feet (0.38 Km) away from and downwind from all inhabited facilities.
- Treatment facilities must be screened from view of major roads and other installation facilities by plant material, berms, walls and fences.

- Fire hydrants should be highly visible and free of any screening. They shall be yellow in color with luminous paint. Caps shall indicate tested water pressure (Fig. 11.45).

11.6.7 Storm Drainage

Storm drainage systems at Hunter AAF will be appropriate to the character of development they serve. Storm drainage systems in densely developed areas require curbs, gutters and underground lines. Storm drainage systems in low-density areas can utilize drainage swales and ditches that are contoured to be compatible with the natural landform. Where detention is required, dry ponds will be used. Dry detention ponds will be enclosed with fencing and screening where there is a risk that children will play in them and where they detract from the visual quality of the site or abutting roadways. Underground detention structures may be approved for use if there is no opportunity to detain sufficient storm water on the surface.

Fig. 11.45 - Fire hydrants are yellow with color-coded markings on the cap that indicate flow rate.

11.7 ARMY STANDARDS

11.7.1 The cited Army Standards shall be met.

- DoD 4525.8-M, DoD Official Mail Manual
- Army Regulation (AR) 420-49, Utility Services
- Army Regulation (AR) 420-70, Buildings and Structures
- Army Regulation (AR) 420-72, Transportation Infrastructure and Dams
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Technical Manual (TM) 5-807-10, Signage
- Manual of Uniform Traffic Control Devices (MUTCD)
- MTMC Pamphlet 55-14, Traffic Engineering for Better Signs and Markings
- Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings

11.8 REFERENCES

11.8.1 The following references are provided for guidance.

- Unified Facilities Criteria (UFC) 2-600-01, Installation Design, Chap 11
- Unified Facilities Criteria (UFC) *3-210-04,* Design: Children's Outdoor Play Areas
- Army Regulation (AR) 1-33, Memorial Programs
- Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques
- Technical Manual (TM) 5-663, Child Development Center, Play Area Inspection and Maintenance Program
- Technical Manual (TM) 5-803-5, Installation Design Manual

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SECTION 12
ANTITERRORISM DESIGN STANDARDS

12.1 INTRODUCTION

12.1.1 Accommodating security and antiterrorism is a significant concern for design of facilities at Hunter AAF. Security and antiterrorism requirements must be integrated into each project from planning to execution. The design of protective elements should also seek to visually enhance and complement the design of its associated facility and the installation as a whole. Site elements such as fences, courtyards, screen walls, swales, berms, planters, and retaining walls can be used effectively for facility protection. These design elements should be designed to provide visual harmony with the main facility, producing architectural compatibility through consistent use and application of materials, forms and colors.

12.1.2 Final design decisions to meet security and antiterrorism requirements and to resolve conflicts require coordination among the design disciplines and appropriate functional areas to include planners, landscape architects, architects, intelligence personnel, security personnel, facility users and engineers. The designers must work to balance antiterrorism requirements with all other requirements that impact design and development. These include the Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Uniform Federal Accessibility Standards (UFAS), National Fire Protection Codes (NFPA) and all applicable local building codes and ordinances. The design team will also consult security personnel to determine whether portions of the design documents are subject to access limitations.

12.2 BUILDING SITING AND DESIGN STANDARDS

12.2.1 A primary concern at Hunter AAF is the threat of terrorist attacks. To minimize the likelihood of mass casualties from terrorist attacks against DoD personnel in the buildings in which they work and live, DoD has developed the Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings.

UFC 4-010-01

The UFC establishes the minimum building antiterrorism standards for all DoD components.

- Mandatory DoD minimum antiterrorism standards for new and existing inhabited buildings are contained in Appendix B.
- Mandatory DoD minimum antiterrorism standards for expeditionary and temporary structures are contained in Appendix D.
- Additional recommended measures for new and existing, inhabited buildings are contained in Appendix C.

Implementation of the mandatory standards is obligatory for all new construction regardless of the funding source. These standards apply to all new construction and major renovations for inhabited structures. The standards will be reviewed before any site planning or design is initiated.

- The minimum standoff distances and separation for new and existing buildings are found in Table B-1 of UFC 4-010-01, except that the minimum standoff distance for inhabited buildings and primary gathering spaces is 82 feet (25 meters) from roadways and parking lots at Hunter AAF.
- The minimum standoff distances and separation for expeditionary and temporary structures are found in Table D-1 of UFC 4-010-01.

Minimum standoff distances and separation are used wherever feasible. If standoff distances can be met, no building hardening measures are required. Appropriate antiterrorism obstacles shall be incorporated into the site design to prevent penetration of an attack vehicle into the secure area perimeter.

Minimum DoD Standards

The DoD minimum standards, when applicable, may be supplemented by more stringent antiterrorism building standards to meet specific threats established by specific Combatant Commanders or based on risk and threat analysis.

Alternative Approach

When the minimum standoff distances can not be achieved because land is unavailable, the standards allow for building hardening to mitigate blast effects. Costs and requirements for building hardening are addressed in the DoD Security Engineering Manual.

12.2.2 Implementing Design Guidance

Additional guidance on applying the *DoD Minimum Antiterrorism Standards for Buildings* can be found in UFC 4-010-02, *DoD Security Engineering Manual*. Currently, this document is in draft form. Until the *DoD Security Engineering Manual* is published, see the guidance provided on the Security Engineering Working Group website.

Website Access for Military and Government Users

This is a password protected website. To enter the site you must be accessing the site from either a ".mil" or ".gov" address. Upon initial entry, you will be prompted with instructions on how to acquire your password.

Website Access for Non Military and Government Users

Currently, the Protective Design Center is developing a procedure for e-mailing the network administrator to receive procedures to enter the site. If upon initial entry into the site there are no instructions on this procedure, contact the Protective Design Center (CENWO-ED-S) at (402) 221-3151 for instructions.

12.2.3 Orientation of Buildings on a Site

The following will be considered in determining the orientation of a building:

- Deny aggressors a clear sightline to the facility from on or off the installation where possible. Protect the facility against surveillance by locating the protected facility outside of the range or out of the view of vantage points.
- Protect against attack by selecting perimeter barriers to block sightlines such as obstruction screens, trees, or shrubs. Non-critical structures or other natural or man-made features can be used to block sightlines.

- Make the facilities more defensible by positioning facilities to permit building occupants and police to clearly monitor adjacent areas.
- Orient buildings so there are no sides parallel to vehicle approach routes.
- Design vehicular flow to minimize vehicle bomb threats and to avoid high-speed approach into any critical or vulnerable area.
- Avoid siting the facility adjacent to high surrounding terrain, which provides easy viewing of the facility from nearby non-military facilities.

12.3 FENCING

12.3.1 Fences are used as protective measures against project-specific threats. They are most appropriately used to define boundaries and to deter penetration of a secure area (Fig. 12.1). A fence will assist in controlling and screening authorized access to a secured area. Fences also serve the following purposes:

- Platform for the Intrusion Detection System.
- Screen against explosive projectiles.
- Prevent forced entry by vehicles, when reinforced to do so.

Fig. 12.1 – Fencing provides a reliable barrier to unauthorized entry.

Fig. 12.2 – Perimeter fencing is flanked by cleared areas.

12.4 LANDSCAPE CONSIDERATIONS

12.4.1 Landscaping guidelines for buildings should not be ignored because of standoff distances. The landscape design should enhance the overall attractiveness of the facility while still providing or enhancing the objective level of security.

12.4.2 Establish clear zones along both sides of security fencing (Fig. 12.2). Vegetation in the clear zone should not exceed four inches in height. (DoD 0-2000.12-H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence,* Appendix EE, Table EE-4). The following additional considerations apply:

- Strategically locate trees and planters to prevent penetration of an attack vehicle into the secure area perimeter. Plants with tall growth habits and/or large mature growth will be located well away from security fences.
- Group trees and shrubs and earth berms to reduce blast effect on key buildings or locations.
- Provide a clear area adjacent to high security structures or fencing (Fig. 12.2).

- Use dense, thorn-bearing plant material to create natural barriers to deter aggressors.

12.4.7 Outdoor play and recreation areas should be screened from viewing from locations off the installation.

12.4.8 Signs that identify, locate and direct residents and supported personnel to installation assets can contribute hostile intelligence gathering and access. The following methods can be used to diminish the risk associated with signage:

- Direct people to a community support or information center to obtain directions to high security activities.
- Direct all incoming personnel and visitors to a specific address for the appropriate facility.

12.4.9 Place trash containers as far away from buildings as possible. Antiterrorism requirements restrict the location of dumpsters to a minimum of 33 feet (10 meters) from inhabited buildings and 82 feet (25 meters) from billeting and primary gathering areas (*Unified Facilities Criteria [UFC] 4-010-01, DoD Minimum Antiterrorism Standards for Buildings*, Table B-1).

Fig. 12.3 – This berm and swale adjacent to a parking lot prevents vehicles from approaching nearby buildings.

12.4.10 Ensure that vegetation and site features within 33 feet (10 meters) of inhabited buildings do not conceal from observation objects of 6 inches (150mm) in height. (UFC 4-010-01, Appendix B, Para B-1.3). This does not preclude landscaping within the unobstructed space, but it will affect the design and may affect plant selection.

12.5 LIGHTING

Lighting systems for security operations provide illumination for visual and closed-circuit television (CCTV) surveillance of boundaries, sensitive inner areas and entry points. When CCTV is used as part of security operations, the lighting system will be coordinated with the CCTV system. Two or more types of lighting systems may be used within a single area. Guidance on the use of security lighting may be obtained from TM 5-811-1, Electrical Power Supply and Distribution.

12.6 BERMS

12.6.1 Earthen berms intended for antiterrorism purposes can fulfill one or more of the following functions (Fig. 12.3).

- Define boundaries of property or boundary limits.

- Provide a barrier to moving vehicles.
- Hinder pedestrian movement.
- Intercept projectiles.
- Obstruct lines of sight.

12.6.2 Berms used to block lines of sight or projectiles must be high enough to achieve those objectives or may be combined with landscaping or other construction elements. Detailed design guidance is contained in Army Technical Manual (TM) 5-853-3/AFMAN 32-1071, Vol. 3, *Security Engineering Final Design.*

NOTE: This Army Technical Manual is a "For Official Use Only" document and is not accessible on the Army Corps of Engineers publications website. A copy of the manual can be acquired by ordering it through a standard publications account.

Fig. 12.4 – The Main Gate to Hunter AAF is well-designed for security and appearance.

12.7 GATES AND ACCESS CONTROL POINTS (ACP)

12.7.1 The Hunter AAF ACPs are key components in the antiterrorism security program. They accommodate the functions of observation, detection, inspection, access control and disablement of hostile personnel and vehicles, while containing the vehicles and pedestrians until access is granted. These areas are one of the most important installation features in the creation of a sense of arrival for both installation personnel and visitors. It is important that these areas present a positive public image (Fig. 12.4).

12.7.2 The Headquarters Department of the Army, Deputy Chief of Staff for Operations and Plans office, DAMO-ODL, in coordination with the Protective Design and Electronic Security Centers of Expertise has developed standards for Army ACP.

12.7.2.1 Canopies for ACPs

ACPs will have a canopy, which will cover the full width of incoming lanes at the Guard Booth. The canopy shall have a minimum clearance of 14.5 feet and shall have a minimum length of 50 feet. The roof supporting structure will consist of columns sized and located to create peripheral vision for the guards with minimal obstructions. Lighting will provide a minimum of 10 foot-candles with a Color Rendition Index of 65. Measures will be taken to protect the canopy from the threat of an over-height vehicle. Details are contained in the following reference:

- *Security Engineering: Entry Control Facilities / Access Control Points*.

12.7.3 Physical Security Equipment

Under DoD Directive 3324.3, the Product Manager, Physical Security Equipment (PM-PSE) is assigned the mission of developing, fielding and supporting Physical Security Equipment (PSE) throughout its life cycle for the Army, Joint Services and other Government agencies.

The DoD Directive identifies and assigns specific areas of responsibility for PSE which include: interior PSE, Command and Control Systems, security lighting, antiterrorism systems, barrier systems and interior and exterior robotics.

12.8 AREA SPECIFIC STANDARDS

12.8.1 Standard For Under Vehicle Surveillance Systems

Under Vehicle Surveillance Systems (UVSS) shall be incorporated at ACPs and other locations as determined by the installation security officer. UVSS installations must be capable of the following:

- Capture the image of the entire vehicle undercarriage;
- Scroll, zoom-in and roam about the total undercarriage image for quick analysis or detailed inspection;
- Allow images to be archived with date and time stamping for future use;
- Allow for smooth traffic flow by inspection of undercarriages when vehicles drive over the system;
- Inspect vehicles of all sizes, from passenger cars to tractor trailers; and
- Surface mounted at existing locations.

12.8.2 Bollards

Fixed bollards may be utilized to address antiterrorism requirements as appropriate for the specific site. Pop-up bollards are not permitted at Hunter AAF.

12.9 ARMY STANDARDS

12.9.1 The cited Army Standards shall be met.

- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*

- Unified Facilities Criteria (UFC) 4-010-10, *DoD Minimum Antiterrorism Standoff Distances for Buildings*. (This document is a "For Official Use Only (FOUO)" publication. Users may contact the Point of Contact posted at the noted website for inquires regarding this document).

- Uniform Federal Accessibility Standards (UFAS)

- Americans with Disabilities Act Accessibility Guideline (ADAAG)

- DoD Instruction 2000.16, DoD Antiterrorism Standards

12.10 REFERENCES

12.10.1 The following references are provided for guidance.

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 12

- DoD Handbook 2000.12-H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence*, February 1993 (This Handbook is a "For Official Use Only (FOUO)" publication. Users may contact the Point of Contact posted at the following website to obtain a copy of the Handbook). http://www.dtic.mil/whs/directives/corres/html/o200012h.htm

- Army Regulation (AR) 525-13, The Army Antiterrorism Program (Available only through the Army Knowledge Online web portal).

- UFC 4-010-02, *DoD Security Engineering Manual,* (This document is in draft form. See the Security Engineering Working Group website.

- Technical Manuals/Air Force Manual series TM 5-853/AFMAN) 32-1071, Security Engineering, 3 volume series: (Volumes 2 and 3 are "For Official Use Only [FOUO]" and are not available on the Army Corps of Engineers publications website. A copy of the manuals can be acquired via your standard publications account. The three volumes cover, Project Development, Concept Design and Final Design respectively).

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APPENDIX A
DESIGN TEAM IDG CHECKLIST

A.1 A completed Design Team Installation Design Guide (IDG) Checklist will be completed for all projects that impact the appearance of Hunter AAF. The DPW Master Planning Division will provide the checklist to all teams designing new facilities, additions, or renovations to existing facilities, or maintenance on the installation. The Design Team IDG Design Checklist is to be completed by the design team to assure the guidelines and standards have been considered and complied with in the design process, and by the DPW Master Planning Division in project review.

A.2 The Designer of Record or Design Agent will provide a copy of the completed checklist, together with a signed certification statement with each design submittal (10% [pre-concept], 35%, 60%, and 90% for each MILCON projects). The Designer of Record will complete the checklist and verify compliance in the space provided. In the case of design-build, all agents i.e. the Corps of Engineers, NAF, AFFES, tenants, etc. shall have the perspective design build contractors submit a completed IDG Checklist as part of their proposal. The completed checklist will be provided to the DPW Master Planning Division for review with concurrence or denial. Upon a determination of concurrence by the Master Planning, the plan and checklist with signatures will then be provided to the Real Property Planning Board for final acceptance or denial. The accepted checklist will become a part of the project record files.

A.3 If plans are denied for non-compliance at the installation or command level (where applicable) of review, an explanation of the denial will be provided to the Designer of Record. The plan and checklist can be resubmitted with revisions as indicated in the explanation of denial.

Links
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A.4 HUNTER AAF INSTALLATION DESIGN GUIDE (IDG) COMPLIANCE CHECKLIST

1. PROJECT TITLE AND DESCRIPTION.

   Title:_____

   Description:_____

   _____

2. PROJECT JUSTIFICATION:_____

   _____

   _____

3. SUSTAINABLE DESIGN:

   a. Has LEED Checklist been attached? (If not, obtain completed checklist)

   b. Does LEED meet or exceed Silver level? (Silver is the standard for all FY06 and future-year MILCON vertical construction projects.)

      Yes _____ - Review project as submitted.

      No _____ - Return submittal to design team for revisions to meet LEED.

4. SITE PLANNING

   a. Was a site plan prepared for the proposed project utilizing the IDG Design Process included in Sections 2, 3 and 5 of the IDG?

      Yes _____ No _____

   b. Does the site plan include Site Planning Design Component guidelines of the IDG?

      Yes _____ No _____

   c. Does the site plan meet antiterrorism requirements identified in Section 12 of the IDG?

      Yes _____ No _____

   d. Designer Comments on Site Planning:

      _____

      _____

e. Does Site Planning comply with the IDG? If not, provide justification.

_____

_____

f. Does Site Planning meet approved Hunter AAF master plan siting compliance?

Yes _____ No _____ If not, provide justification.

_____

_____

g. Has NEPA been initiated for the construction effort in accordance with AR 200-2?

Yes _____ No _____

h. Has airspace criteria been consider relative to airfield accident potential zones?

Yes _____ No _____

5. BUILDINGS

a. Does the building exterior design meet the Building Design objectives defined in the IDG?

Yes _____ No _____

b. Is the exterior building designed to meet the Structural Characteristics defined in the IDG?

Yes _____ No _____

c. If the project is a renovation or addition, does the proposed renovation or addition meet IDG building design and structural characteristics?

Yes _____ No _____

d. If the project is a renovation or addition to a historic building, does the renovation or addition maintain the design integrity of the original building or meet Historical Approval Agencies' requirements for any deviations?

Yes _____ No _____

e. Does the building exterior design meet antiterrorism requirements (if applicable)?

Yes _____ No _____

f. Designer Comments on exterior Building Design:

_____

_____

g. Does Building design comply with the IDG? If not, provide justification.

_____

_____

6. CIRCULATION

a. If the project includes roadway construction, does the proposed plan meet Federal Highway and/or local guidelines defined in the IDG?

Yes _____ No _____

b. If the project includes roadway construction, does the proposed plan meet antiterrorism roadway setback requirements defined in the IDG?

Yes _____ No _____

c. If the project includes roadway construction, does the proposed plan include applicable roadway alignment and intersection guidelines defined in the IDG?

Yes _____ No _____

d. If the project is an entrance gate, does the proposed plan include entrance gate guidelines and standards defined in the IDG?

Yes _____ No _____

e. If the project includes parking, does the proposed plan meet the Parking Lot Location/Design guidelines defined in the IDG?

Yes _____ No _____

f. If the project includes pedestrian circulation, does the proposed plan meet the Walkways and Pedestrian Circulation Guidelines in the IDG?

Yes _____ No _____

g. If the project includes bicycle circulation, does the proposed plan meet the Bikeway Guidelines in the IDG?

Yes _____ No _____

h. Designer Comments on Circulation Design:

_____

_____

i. Does Circulation Design comply with the IDG? If not, provide justification.

_____

_____

7. PLANT MATERIAL

a. All projects for new construction should include the planting of trees shrubs and/or groundcover. Does the proposed planting plan include a project plan?

Yes _____ No _____

c. Does the proposed planting plan meet antiterrorism requirements defined in the IDG?

Yes _____ No _____

d. Does the proposed planting plan include plant material recommended in the selected Plant Palette Matrix included in the IDG?

Yes _____ No _____

e. Designer Comments on Landscape Design:

_____

_____

_____

f. Does Landscape Design comply with the IDG? If not, provide justification.

_____

_____

8. SITE ELEMENTS

a. If the project includes Site Furnishings, does the proposed plan follow the guidelines in the IDG?

Yes _____ No _____

b. If the project includes Signs, does the proposed plan meet the Signs standards in the ?

Yes _____ No _____

c. If the project includes exterior Lighting, does the proposed plan meet the exterior Lighting guidelines defined in the IDG?

Yes _____ No _____

d. Will all power and other distribution lines to be located underground?

Yes _____ No _____

e. Will all substations and transformers be designed as to be screened from view?

Yes _____ No _____

f. Will all sewer and water lines to be located underground?

Yes _____ No _____

g. Are all storm drain systems designed to meet the guidelines defined in the IDG?

Yes _____ No _____

h. Designer Comments on Site Elements Design:

_____

_____

i. Does Site Elements Design comply with IDG? If not, provide justification.

_____

_____

9. ANTITERRORISM (SECURITY)

a. Have installation boundary setbacks been included?

Yes _____ No _____

b. Have building setbacks from roads, parking, other buildings been included?

Yes _____ No _____

c. Do site plans and landscape plans include the criteria outlined for antiterrorism?

Yes _____ No _____

d. Designer Comments on Antiterrorism Compliance:

_____

_____

e. Does Antiterrorism Design comply with the IDG? If not, provide justification.

_____

_____

I hereby certify that the information provided is in compliance with the guidelines of the installation or applicable IDG, except as justified as non-compliance.

_____ _____

Designer of Record Date

Concur _____ Deny _____, Explanation of denial is attached.

_____ _____

IDG Coordinator Date

Accept _____ Deny _____, Explanation of denial is attached.

_____ _____

Command Review (Where Applicable) Date

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APPENDIX B
PROJECT REQUIREMENTS IDG CHECKLIST

The following checklist is optional and is intended for use on major projects.

Links

Go to Appendix C

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PROJECT REQUIREMENTS CHECKLIST

For Completion by Hunter AAF DPW Project Managers for Use in Preparation of the Request for Proposals (RFP).

PROJECT _____ LOCATION _____

DPW/DIS POC _____ PH# _____

ADDRESS: _____

_____

E-MAIL _____

DATE CHECKLIST COMPLETED _____ BY _____

When completing this form it is important to remember that it is the responsibility of the installation to resolve any conflicts between the different "users" (i.e. DPCA, DPW, etc.) about wants, needs, etc. The A/E that prepares the RFP must have the specific guidance contained herein to get you what you want. If there is information you wish to provide that is not specifically requested or you are unable to make your desires clear within the confines of this checklist, then add those comments at the end.

1.0 GENERAL INFORMATION

A. Maps and plans available: (Provide copies with completed checklist)

1. Basic Information Maps (BIMs): (List Drawing Numbers)

   (Maps should be provided in Spatial Data Standards (SDS) compatible GIS format whenever possible.)

   Site topography
   Site Sanitary Sewer
   Site Storm Sewer
   Site Electrical
   Site Water
   Site Plan Extract - from RPMP (Future Development Site Plan)
   Other
   Project Location Plans
   Area Map
   a) Site Map

2. Aerial Photograph (Preferred to Topographic)

3. USGS Map

4. Project Siting Plan (Proposed)

5. Environmental

    a) Jurisdictional wetlands designation
    b) Other historical concerns:

B. Project Building Plans: (If renovation/addition or prior design, provide available information and plans)

1.	Foundation	7.	Electrical
2.	Basement	8.	Mechanical
3.	Floor	9.	Plumbing
4.	Structural	10.	Site Utilities
5.	Roof	11.	Specifications
6.	Elevations	12.	Other

C. Applicable Codes and Standards:

List all known applicable codes and regulations. Generally, NAF construction will not follow Federal or Military Specifications.

Department of Defense (DoD) Governing criteria is UFC 1-200-01, *Design: General Building Requirements*, 31 July 2002

Local Building Codes:

State and County Codes:

Environmental Regulations:

Installation Regulations:

Cultural Regulations:

Other:

National Fire Protection Codes (NFPA), UFC 3-600-01, *Design: Fire Protection Engineering for Facilities*, 17 April 2003

1.1 TEMPORARY FACILITIES AVAILABLE TO THE CONTRACTOR

A. Facilities available to contractor during construction:

1. General Site Plan has been annotated to show limits of construction site: _____Yes, _____No. If the contractor requires the use of additional area, he must obtain written approval from the Contracting Officer.

2. Construction Office available: _____Yes, _____No.

3. Covered materials storage available: _____Yes, _____No.

4. Uncovered materials storage available: _____Yes, _____No.

NOTE: Security of construction site and materials is the Contractor's responsibility.

5. Select fill borrow areas, spoil areas, sanitary fill and haul routes are shown on attached Installation map: _____Yes,_____No.

   List any restrictions or notes on the use of those areas:

NOTE: Disposition of scrap and salvageable materials resulting from construction is the responsibility of the contractor unless otherwise noted and agreed.

B. Utilities available to contractor during construction:

1. Potable Water: ____Yes, _____No; Metering required: _____Yes, _____No;

   Cost $_____per_____.

2. Non-Potable Water (Irrigation, Machine Washing, etc.): ____Yes, _____No;

   Metering required: _____Yes, _____No; Cost $_____ per _____.

3. Electricity: _____Yes, _____No; Metering required: _____Yes, _____No;

   Cost $_____ per _____.

4. Natural gas: _____Yes, _____No; Metering required: _____Yes, _____No;

   Cost $_____ per _____.

5. Sanitary sewer: _____Yes, _____No

NOTE: Utilities used at the construction may be metered and/or charged to the contractor. The rate schedule for utilities will be provided as part of this

completed checklist and shall be the basis by which the installation will bill the utility usage. Installation of temporary meters, where required, and temporary tie-ins to the utility systems shall be the responsibility and at the cost of the contractor.

1.2 DEMOLITION REQUIREMENTS

Facilities for demolition, relocation, or retention.

Provide description, size, type construction, and location of any existing facilities on the site that must be demolished, relocated or retained. Consider all structures, foundations, pavements, communications, and utilities (whether active or abandoned). Consider demolition hazards (i.e. lead, asbestos, etc.). Every effort shall be made by the installation to ensure compliance with the clean site policy. Provide the date when the clean site will be available. Recycle building demolition and debris material when ever possible.

1.3 PAVING REQUIRMENTS

A. Parking area (s) required: _____Yes, _____No.

1. Location and brief description:
2. Number of parking spaces for passenger vehicles: _____

   (including _____ spaces for the handicapped).
3. Type of pavement: _____
4. Perimeter of parking area (s) to have concrete curb:_____Yes, _____No.
5. Striping of parking spaces required: _____Yes, _____No.
   a) Width of stripes: _____
   b) Type of paint to be used: _____
1. Special signage required: _____
2. Concrete wheel stops required: _____Yes, _____No.
3. Handicapped ramps/depressed curbs required: _____Yes, _____No.

B. Service road (s) required: _____Yes, _____No.

1. Location: _____
2. Type pavement: _____

3. Concrete curbing required on both sides of road: _____Yes, __No.

4. Minimum roadway width: _____Feet _____.

List any other special paving considerations or needs: _____

_____

_____

_____

C. Sidewalks required: _____Yes, _____No.

1. Type of paving material: _____

2. Location: _____

3. Minimum width: _____

4. Minimum thickness shall be 4" with welded wire fabric.

D. Concrete dumpster pads required: _____Yes, _____No.

1. Number of pad (s): _____each. See note below.

2. Size of each pad: _____ feet by _____ feet.

3. Provide bumper stops at rear of pads: _____Yes, _____No.

4. Provide architectural screening of pads: _____Yes, _____No.

Type: _____

NOTE: Building orientation or design may eliminate need for screening. Screening shall be in accordance with the Hunter AAF Installation Design Guide (IDG).

1.4 UTILITIES SERVICE REQUIREMENTS

A. Electrical Service: Meter required: _____Yes, _____No,

Type: _____

1. Type system to be installed: _____underground, _____aerial.

2. Type transformer (s) to be installed: _____Pole mtd., _____Pad mtd.,

NOTE: Screen in accordance with Hunter AAF IDG.

3. Available Voltage: _____

4. Location of tie-in point: _____

B. Water Service: Meter required: _____Yes, _____No.

1. Size and location of tie-in point: _____

2. Additional fire hydrant (s) required: _____

C. Sanitary Sewer Service: Size and location of tie-in point: _____

_____

D. Storm Drainage:

1. Design for _____year occurrence.

2. Type System: _____Surface, _____Underground

3. Location of tie-in point for existing underground storm drainage system if incorporated in contractor design: See Site Plan.

E. Gas Service: _____Natural, _____Propane;

Meter required: _____Yes, _____No.

1. For Heating: _____Yes, _____No.

2. For domestic hot water: _____Yes,_____No.

3. For laundry dryers: _____Yes,_____No.

4. For kitchen equipment: _____Yes,_____No.

5. Size and location of tie-in point: _____

NOTE: Contractor (Offeror) shall be responsible to determine that all of the existing service utilities are of sufficient capacity to accommodate all of the design loads for this total facility. Should a Contractor (Offeror) determine that one or more of the existing service utilities are not adequate to accommodate the Contractor's (Offeror's) design loads for this total facility, then the Contractor (Offeror) shall submit with his initial and any subsequent proposal (Best & Final Offer), the requirements, design data and the price for increasing the capacity of each existing service utility system or for providing a new service utility system. Design loads for this facility shall be calculated in accordance with the criteria specified in this Request for Proposals (RFP), with the most stringent criteria governing. The responsibility for verification and field location of any and all

information provided in the RFP and on any attached or enclosed drawings, or other documents shall be and is the responsibility of the Contractor (Offeror).

F. Coordination and Notification Required for Utilities Tie-in:

1. Point of contact for coordination: _____

   Tel. _____ Email _____

2. Road Closing:

   a) Can both lanes be closed to traffic: _____Yes, _____No.

   b) Maximum time road can be closed:

   c) Can road be closed over a holiday or weekend: _____Yes, _____No.

3. Minimum notification time required for utilities outages and road closing:

   a) Electric Power: _____working days.

   b) Water: _____working days.

   c) Gas: _____working days.

   d) Steam: _____working days.

   e) Central AC lines: _____working days.

   f) Roads: _____working days.

   NOTE: Enclose underground primary electrical service in concrete from the new utility tie-in points to the pad mounted transformer and/or mechanical room panel boxes. Provide one spare conduit for each service sealed at both ends. The conduit may be PVC provided it conforms to NFPA 70, current edition.

   NOTE: If existing sidewalk, curbs, gutters, or paving are disturbed or removed during construction, the paving or concrete must be replaced by the Contractor.

G. Coordination and Notification Required for Railroad Track Work:

1. Point of contact for coordination: _____

   Tel. _____ Email _____

2. Road Closing:

   a) Can both lanes of traffic be closed: _____ Yes, _____ No.

   b) Maximum time road can be closed:

   c) Can road be closed over a holiday or weekend: _____ Yes, _____ No.

3. Railroad Track Closing:

   a) Can track be closed to traffic: _____ Yes, _____ No.

   b) Maximum time track can be closed: _____

   c) Can track be closed over holiday of weekend: _____ Yes, _____ No.

4. Minimum notification time required for railroad track and road closing:

   a) Railroad track: working days.

   b) Road: working days.

5. Are used track components to be sorted and properly stored: ___ Yes, ___ No.

6. Are samples, ultra-sonic inspections, temperature recordings, and certificates to be submitted for ties, rail track components, or ballast: _____ Yes, _____ No.

7. Are RAILER markings and reporting required: _____ Yes, _____ No.

8. Are there special radio or communication requirements: _____ Yes, _____ No.

NOTE: If existing sidewalk, curbs, gutters, drainage, ballast, or paving are disturbed or removed during construction, the paving, drainage, ballast, or concrete must be replaced by the Contractor.

1.5 ARCHITECTURAL AND STRUCTURAL BUILDING DESIGN REQUIRMENTS

A. Seismic Design Zone: _____. Structural design shall be in accordance with codes specified in the RFP.

B. Basic wind speed: _____ mph.

C. Ground Snow Load: _____ PSF (Plus code live load).

D. Maximum Frost Penetration: _____inches.

E. Heat Transmission: "U" Factors:

1. Walls: _____.
2. Floor (slab-on-grade) at perimeter foundation wall: _____.
3. Floor over ventilated crawl spaces: _____.
4. Ceiling and/or roofs: _____.

F. Roof:

1. Minimum pitch: _____
2. Type: _____
3. Scuppers and drains are required: _____ Yes, (If a parapet type roof is proposed); _____ No.
4. Gutters and downspouts: _____ Yes, _____ No, Type: _____
5. Drainage carry off: _____ Splash Blocks; or _____ Underground drainage system (internal roof drains not permitted.)
6. Access to roof: _____.

NOTES: Catwalks to and around rooftop HVAC units and other equipment are required (Cary tread or equal). Where possible, architectural screening of visible rooftop equipment is required.

G. Site Conditions:

1. Environmental Assessment required: _____ Yes, _____ No.

   Completion Date: _____.

   EIS Required: _____ Yes, _____ No.

   Completion Date: _____.

   (Provide copies of actions to date.)

2. Cultural Resources Compliance Completed: _____ Yes, _____ No.

3. Site Conditions:

   Topographical feature description: _____

   _____

   _____

   _____

   Confirm or identify subterranean hazards:

   Fill area
   Old foundations
   Unexploded ordnance
   Existing/abandoned utility line
   Tunnels/mines
   Other

4. Soil investigation data available: ____ Yes, ___ No.

   At project location: _____ Yes, _____ No.

   Other:

5. Soil bearing capacity: _____ PFS. Actual test _____, Assumed _____.

   NOTE: The successful Offeror shall be responsible for accomplishing additional necessary testing to verify soil characteristics at the site and design of the foundation system to meet these requirements.

H. Building Exterior: Brick: _____Yes, _____No.

Other: _____

NOTE: Where brick is required, the exterior walls shall be finished with face brick with through body integral color and shall match the brick currently in place in Building No's _____.

NOTE: The final floor plan as designed by Offerors shall include all functional areas outlined subsequently in this section. Gross building areas shall not exceed that specified in the RFP, including the mechanical room.

I. Barrier Free Requirements: (Where applicable) as minimum, _____ guest units shall be barrier free.

NOTE: Where required, "Barrier Free Requirements" shall be designed and constructed to provide for the Physically Handicapped (interior and exterior), in accordance with Uniform Federal Accessibility Standards (UFAS) and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

J. Kickplates required on interior wood doors: _____Yes, _____No.

K. Approximate total maximum occupancy:

1. Female: Adults _____ Children _____
2. Male: Adults _____ Children _____
3. TOTAL: _____

Comments: _____

_____

_____

_____

L. Landscape Requirements:

List any special requirements:

NOTE: Offerors will provide a Landscaping Plan for the project area as required in the RFP. Surface area disturbance and tree removal will be minimized. Trees determined to be retained will be incorporated in the Landscaping Plan. Landscaping shall refer to the planting of trees, shrubs, plants, etc. and shall not be associated with establishment of turf as defined below. Trees, shrubs, plants, etc. shall be guaranteed for a period of one (1) year from time of planting.

M. Establishment of Turf:

N. Soil Poisoning: For termite protection is _____, is not _____ required.

NOTE: It will be the Contractor's responsibility to protect all existing turf and landscaping affected by the construction and to replace any turf or landscaping that has been damaged, for the term of the contract.

O. Paint Color:

List standard paint colors:

1. _____

2. _____

3._____

Etc. _____

P. Finishes:

List standard finishes:

1. _____

2. _____

3._____

Etc. _____

1.6 ELECTRICAL DESIGN REQUIREMENTS

A. Exterior lighting:

1. Parking area (s) lighting required: _____Yes, _____No.

   a) Type of lighting: _____ High Pressure Sodium

   _____ Low Pressure Sodium

   _____ Mercury

   _____ Halogen

   _____ Other

   b) Average Intensity: _____ foot candles per sq. yd. with a uniformity ratio of 4:1_____, Other _____. (Avg. to min.)

   c) Type pole: _____.

   d) Special mounting requirements:

e) Switching:

Type: _____ Manual

_____ Clock _7 day _7 day

_____ Astronomical

_____ Photo Electric

_____ Combination of above as indicated.

_____ Other

2. Exterior building lighting required: _____Yes, __No.

a) Type of lighting: _____ High Pressure Sodium

_____ Low Pressure Sodium

_____ Mercury

_____ Halogen

_____ Other

b) Average Intensity: _____foot candles per sq. yd.

c) To be mounted on the building structure: _____Yes, _____No.

d) Switching:

1) Type: _____ Manual

_____ Clock _7 day _7 day

_____ Astronomical

_____ Photo Electric

_____ Combination of above as indicated.

_____ Other

2) Location: _____.

3) Lighting for plumbing and electrical chases required:

_____Yes, _____No.

NOTE: All electrical wiring (exterior and interior) shall be copper.

B. Outside weather proof receptacles: shall be installed every _____ feet along the building exterior. Outside weather proof receptacles should be RCD (GFCI) protected.

NOTE: The building shall have emergency light fixtures and exit lights in accordance with NFPA requirements. Both shall have battery powered back-up, charge level meters and test buttons.

C. Electromagnetic Shielding:

List any electromagnetic shielding requirements.

D. Standby/Backup Power Requirements:

List and standby/backup power requirements.

1.7 MECHANICAL/PLUMBING DESIGN REQUIREMENTS

A. Heating design data:

1. Below is the outside dry bulb temperature that is equaled or exceeded 97 ½ percent of the time, on the average, during the coldest 3 consecutive months (Dec., Jan., and Feb.). Heating design shall be based on the dry bulb temperature equaled or exceeded 97 ½ percent of the time.

    a) Dry bulb temperature: _____.

    b) Wind velocity: _____.

    c) Degree days: _____.

2. Interior design temperatures: 68 degrees.

B. Air conditioning design data:

1. Outside dry bulb and wet bulb temperatures that are equaled or exceeded 2 ½ percent of the time, on the average, during the warmest 4 consecutive months (Jun. thru Sep.) are given below. Air conditioning design shall be based on the 2 ½ percent dry bulb, wet bulb temperature.

    a) Dry bulb temperature: _____.

    b) Wet bulb temperature: _____.

2. Interior design temperatures: _____.

    a) Dry bulb temperature: _____.

    b) Wet bulb temperature: _____.

C. Heating and air conditioning system: shall be designed to provide a relative humidity of 50% + 10% or -10%.

D. Mechanical Systems: Economy cycle. The air conditioning system except where room fan coil units are located, if located where the winter design dry bulb temperature is 35 degrees F (97 ½% basis) or less, shall be designed so that 100% outside air may be used in the system during those cool weather periods when the outside air temperature is sufficiently low to provide all the cooling needed, or reduce the load on the air conditioning refrigeration equipment. Use of the economy cycle in areas above 35° F shall be provided when it can be clearly shown that use of the economy cycle is cost effective.

E. Install humidity control override: _____Yes, _____No.

F. Automatic timer controls required for:

1. Heating System: _____Yes, _____No.

2. Air Conditioning System: _____Yes, _____No.

G. Heating and Air Conditioning Source:

1. Self contained plant: _____Heat, _____AC.

2. Supply lines from central plant: _____Heat, _____AC.

3. Purchased heat: _____

H. Low profile roof mounted HVAC units are permissible:_____Yes, _____No.

I. Automatic timer controls required for:

1. Heating System: _____Yes, _____No.

2. Air Conditioning System: _____Yes, _____No.

J. Heating fuel to be used:

Fuel: _____Natural gas, _____#2 Fuel oil, _____Propane.

K. Dual fuel heating plant required: _____Yes, _____No.

Primary Fuel _____, Secondary Fuel_____.

L. Outside air supply intake: to close when building is unoccupied:

_____Yes, _____No.

M. Outside air supply intake: to close when building is unoccupied:

_____Yes, _____No.

N. Type heating and air conditioning filters required:

( ) Permanent ( ) Throw away

O. Covers and locks: required on interior utilities controls: _____Yes, _____No.

P. Plumbing Design Data:

1. Exterior hose bibs: Minimum of _____ each with ¾" hose connection on building exterior.

    a) Frost protection required: _____Yes, _____No.

    b) Removable cutoff handles required: _____Yes, _____No.

2. Interior hose bibs: See Functional Requirements

3. Grease trap (s) required: _____Yes, _____No.

    Location (s):

4. Commodes shall be floor mounted flush valve type.

5. Lift station required: _____Yes, _____No.

6. Hot water heater (s) required: _____Yes, _____No.

    a) Energy source: _____ Natural gas, _____ #2 Fuel oil.

    b) Required minimum temperature: _____

    c) System: _____

NOTE: All domestic water piping below grade shall be type K copper. All domestic water piping above grade shall be either type L copper in accordance with appropriate codes. All joints shall be soldered with 95/5 Tin/Antimony

solder. The entire potable water system shall be lead free. Vent piping shall be schedule 40 galvanized steel or DWV weight copper.

7. Provide a minimum of _____ floor drain (s) in the laundry and mechanical room.
8. Insulate all water pipes (hot & cold) above slab: _____Yes, _____No.

NOTE: The domestic hot and cold water piping below grade shall be kept to a minimum, and below the frost line if located outside the building perimeter.

9. All domestic water pipes (hot & cold) shall be stenciled HW or CW. If pipes have been insulated then the pipe insulation shall also be stenciled.
10. Provide grease interceptor: _____Yes, _____No.

    Location: _____
11. Provide a water filtration system: _____Yes, _____No.

    Location: _____
    Type: _____
12. Other plumbing considerations or requirements:

2.0 MINIMUM REQUIREMENTS FOR RESTROOMS

The following criteria are for minimal requirements only and may be superseded in quantities and/or finishes, providing that changes are an upgrading of the minimal requirements.

A. General: MALE and FEMALE

ITEM	QUANTITY	SPECIAL REQUIREMENTS
Lavatory	_____	
Commode	_____	
Faucets	_____	chrome finish.
Expose pipes/valves	_____	chrome finish.
Pipe penetrations	_____	chrome finish escutcheons.
Clean outs	_____	chrome covers.
Mirrors	_____	mech. wall fasteners.
		Lighting
Floor drain	_____	each restroom.
Hose bib	_____	under lavatory in each restroom.
Wall finish		ceramic tile to 5' height
Ceiling		moisture resistant DW.
Floors		ceramic tile w/ceramic tile base, or quarry tile w/quarry tile base. Tile shall be MUD-SET.

Toilet Partitions	_____	at all commodes and urinals. overhead braced w/door bumpers baked enamel w/skirts.
Skirts	_____	18" stainless steel. watertight top edge.
Duplex receptacle	_____	GFCI type over vanity.
Paper towel dispenser with trash receptacle	_____	recessed in wall.
Hand dryer	_____	over each lavatory.
Soap dispenser	_____	liquid pump.
Toilet paper dispenser	_____	each commode stall.
Ash receptacle	_____	recessed, each restroom.

B. Specific: WOMENS

Sanitary napkin disposal	_____	each commode stall.
Sanitary napkin disposal	_____	each restroom, coin operated.

C. Specific: MENS

Urinal	_____	porcelain wall mounted w/stainless steel part.

NOTE: Each restroom shall be designed and constructed with provisions for the handicapped and shall conform to the latest edition of the National Standard Plumbing Code and the Uniform Federal Accessibility Standards published in the Federal Register, August 7, 1984 (Current Edition).

3.0 FIRE PROTECTION REQUIREMENTS

A. Sprinkler system required: _____ Yes, _____ No.

1. Type system to be installed: _____ Wet, _____ Dry.

2. Complete coverage throughout the structure: _____Yes, _____No.
   If no, describe proposed system, layout, etc.:

3. Exterior siamese connections are required.

B. Detection System:

1. Smoke detectors required: _____Yes, _____No.

   NOTE: Radium type shall not be used.

2. Heat detectors required: _____Yes, _____No.
   (Rate of Rise Heat Detectors shall not be permitted.)

NOTE: When smoke and heat detectors are specific, full coverage of the building is required. In addition, heat detectors are also to be installed in conjunction with potential fire producing equipment such as furnaces, electric motors, etc. All detection devices shall be spaced and installed in accordance with manufacturer's specifications and the latest edition of the NFPA in effect at the time of installation. Heat detectors shall be set to trigger at 135° F. The heat and smoke detectors shall be the combination type. The smoke detection unit shall alarm locally and the heat detection unit shall alarm the facility and transmit the alarm to the fire department via a dedicated telephone line or appropriate transmission media, i.e. radio transmission equipment. Automatic cutoff of air handling equipment is required when smoke or heat detectors, sprinkler systems, or any other automatic/manual fire alarm suppression system are activated.

C. Manually Activated Fire Alarm System: installed in accordance with the latest edition of the NFPA in effect at the time of installation, is required. Also provide manual pull stations at the ends of the building. The pull stations shall be tied into a central panel box that will signal the fire department via a dedicated telephone line or appropriate transmission media, i.e. radio transmission equipment.

D. Special fire suppression system (s) required: _____ Yes, _____ No.

Describe type, location, and justification:

E. Fire extinguishers (manually operated) are required.

1. Government furnished: _____Yes, _____No.

2. Quantity and locations shall be based upon building design, NFPA, requirements, and coordinated with Installation's fire department.

3. Recessed cabinet mounted: _____Yes, _____No.

NOTE: The Contractor (Offeror) shall furnish and install the recessed fire extinguisher cabinets. The cabinets shall be at a minimum 24 1½"tall, 7" deep and 8 ½" wide w/glass doors.

F. All interior finish materials shall be per NFPA standards and UFC 3-600-01, *Design: Fire Protection Engineering for Facilities*, 17 April 2003.

G. Water supply lines: for the sprinkler system shall be black steel pipe.

H. The installation's standard fire alarm panels shall be specified for ease of maintenance and sustainability.

I. Emergency Lighting Requirements:

4.0 SECURITY REQUIREMENTS

A. Building physical security:

1. Intrusion detection system required: _____Yes, _____No.
    a) Type system to be installed.
    b) Desired location of detectors:
    c) Exterior door alarm requirements:
    d) Exterior window alarm requirements:
2. Duress alarm system (s) required: _____Yes, _____No.
    1. Type system to be installed.
    2. Location (s):

B. Safe (s) required: _____ Yes, _____ No.

1. Type and Number:
2. Size:
3. Location (s):
4. Secure to building: _____ Yes, _____ No, if yes, how:
5. Connect to main intrusion alarm system: _____ Yes, _____ No.

C. Remote transmission of the intrusion alarm system: to the installations master system required: _____ Yes, _____ No. If yes, provide and install the transmitter, all conduit, wiring, hookups from the intrusion alarm devices to the transmitter, as well as all exterior underground conduit, required wiring, panel boxes and all other ancillary equipment to bring the system to the existing communication transmission lines. The final connection at the communication line will be made by the government. All systems proposed shall be compatible with the existing system (s) installed at the installation. Point of coordination is Provost Marshall's Physical Security Officer. Specify the installation's standard intrusion alarm system if required.

D. Keying requirements:

1. Rooms requiring card readers:
2. Rooms requiring cipher locks:
3. Rooms requiring individual keys:
4. Rooms requiring master keys:
5. Exterior keying requirements:
6. At least six (6) keys shall be provided for each lock. An additional twelve (12) sub master and six (6) master keys shall be provided.
7. The Offeror shall provide fifty (50) key blanks in addition to the above keying requirements.

E. All exterior doors shall have unremovable hinge pins.

F. Panic hardware shall be in accordance with NFPA requirements.

G. Hardened secure area (s) required: _____ Yes, _____ No

Location (s):

H. Fencing Requirements:

1. Location:
2. Type and height:
3. Gate requirements:

I. Antiterrorism Requirements:

1. Blast resistant windows:
2. Setbacks:
3. Barriers:
4. Others:

J. Risk/Threat Analysis Requirements:

1.

2.

3.

5.0 COMMUNICATIONS REQUIREMENTS

A. Intercom system required: _____ Yes, _____ No.
Give a brief description of the requirements for the system:

B. Music/Paging system required: _____ Yes, _____ No.
Give a brief description of the requirements for the system:

C. Telephone system required: _____ Yes, _____ No.

Location:

Type:

Pay telephone required: _____ Yes, _____ No. If required, unit (s) will be wall hung. Contractor shall run wire and conduit from pay phone outlets to the main panel. Phones to be provided by Contractor.

NOTE: Contractor shall provide all conduit, wire, junction boxes and pull wires for the telephone system as required. Hookup of the telephone system will be performed by the Contractor. The Contractor shall coordinate all the telephone requirements with the Hunter AAF DPW office and the local telephone company to determine requirements and provide space for communication equipment, panels, etc., in the mechanical room of where otherwise designed.

The basic telephone system shall be the "Centrax System" as provided by: _____

_____

They system functions shall include the following:

1. Direct in dialing, with restrictions on receiving collect calls.

2. Direct out dialing to local exchange number only.

3. Restrictions on placing chargeable calls outside the local exchange, except for calls charged to credit card or calls made with the charges reversed.

D. Television system required: _____ Yes, _____ No.

1. The technical and installation requirements of the television system shall be coordinated with _____ the local cable television provider.

2. Locations/number of internal outlets:

3. Wiring and grounding shall be in accordance with the National Electric Code.

E. Mass Notification System (Required per UFC 4-010-01, Standard 23: for New Inhabited Buildings and for Existing Buildings (Primary Gathering and Billeting), also for Existing Buildings, Recommended for all Inhabited Buildings)

Type of Mass Notification System Required:

6.0 SIGNAGE REQUIREMENTS

(Excluding those required by NFPA and OSHA)

D. Interior signage:

E. Exterior Signage:

All exterior signage shall conform with the Hunter AAF IDG and Exterior Finish Standards and color charts.

7.0 OTHER COMMENTS

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APPENDIX C
INTERIOR DESIGN REVIEW CHECKLIST

The following checklist is optional and is intended for use on major projects.

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INTERIOR DESIGN REVIEW CHECKLIST

1. Installation	Project	Date
Job Description		
Building No.	Building Cost$	
Evaluator	Furnishing Cost$	
Using Agency Coordinator	Phone#	
Designer	Phone#	

ITEM	YES	NO	N/A
2. Is the interior design integral to the facility design?			
- Interior design is specified by the using agency.			
- Scope of work includes building related interior design.			
- Scope of work includes furniture related interior design.			
- Design incorporates Army Installation Design Guide and Standards criteria.			
- DPW representative was a member of Pre-selection and/or Selection Boards.			
Preselection member:			
Selection member:			
3. Was the designer provided interior design criteria?			
- Designed Guide for Interiors DG 1110-3-122.			
- Design Guide for facility type designed.			
- Army Installation Design Guide and Standards.			
4. The design has been reviewed and the following are acceptable?			
<u>For building related interior design?</u>			
- Statement of Design Objective			
- Sketches			
- Color Board			

ITEM	YES	NO	N/A
- Furniture Plan			
- Exterior Materials and Finishes			
- Graphic Design			
Hand Drawn Sketches			
Digital image files (JPG, BMP, etc.)			
3D Model			
Animation (AVI, etc.)			
- Interior Design Finish Schedule			
- Government Furnished Material List			
Items for Installation of Furniture and Accessories			
-Predesign Evaluation:			
Maintenance Data			
Floor Systems			
Electrical Equipment and Task/Supplemental Lighting			
- Interior Element Specification			
Cost Estimates:			
Maintenance and Repair			
New Work			
Equipment-in-place and Furnishings			
For furniture related interior design:			
- Typical furniture layout			
- Furnishing, fabrics and finishes board			
- Furnishings plan			
- Sketch perspectives			
- Colored rendering			
- Photographs			
- Catalog Cuts			
- Furnishing illustration sheets			
- Furnishing placement lists			
- Furnishing order forms			

ITEM	YES	NO	N/A
- Furnishing contract specifications			
5. Does the interior design address the following functions?			
- Communications			
- Storage/filing			
- Display surfaces			
- Work surfaces			
- Conference Space(s)			
- Privacy			
- Lighting			
- Planting			
- Spatial considerations			
- Color/texture characteristics			
- Reflectance values			
- Acoustical considerations			
- Mechanical fixture placement			
- Electronic support			
- Furnishings/accessories			
- Work, training or paper flow			
- Hardware selection			
- Graphics/signage			
- Force Protection			
- Physical Security			
- Fire Safety			
6. Construction and installation phase			
- Positive first impression is created			
- Coordinated color scheme, interior reflecting exterior			
- Area & shape of spaces match function & support mission			
- Furnishings support function of space			

ITEM	YES	NO	N/A
- Creative use of interior design spaces			
- Retained designer to review and approve contractor submittals			
- Retained designer to oversee the installation of furnishings			
- Color boards were required and reviewed			
- Interior appearance policy is implemented			
Describe actions taken to ensure quality interior design to all negative responses on an attached sheet. Maintain a copy of this interior design review checklist and all negative responses in the DPW project file.			
I hereby certify that the information provided is in compliance with the guidelines of the installation or applicable IDG, except as justified as non-compliance.			
Designer of Record	Date		
Concur			
Deny (Explanation of denial is attached.)			
Master Planner	Date		
Accept			
Deny (Explanation of denial is attached.)			
Command Review (Where Applicable)	Date		

APPENDIX D
SUSTAINABLE DESIGN

D.1 WHAT IS SUSTAINABLE DESIGN?

D.1.1 Sustainable design and development is an integrated approach to planning, designing, building, operating, and maintaining facilities in a collaborative and holistic manner among all stakeholders (Fig. D.1). It is a systematic process and engineering practice with how to do it guidance, checklist, tools, and scoring systems. Sustainable design integrates the decision-making across the installation, basing every decision on the greatest long-term benefits and recognizing the interrelationship of installation actions with the natural environment. In the content of Fort Stewart, sustainable design is the design, construction, operation, and reuse/removal of the built environment in an environmentally and energy efficient manner (Fig. D.2). The basic objectives of sustainability are:

- Reduce the consumption of energy, land, materials, water, and other non-renewable resources.
- Minimize the waste of energy, land, materials, water, and other limited resources.
- Protect the natural environment that is the source of all resources.
- Create livable, healthy, and fiscally productive manmade environments for existing and future generations.

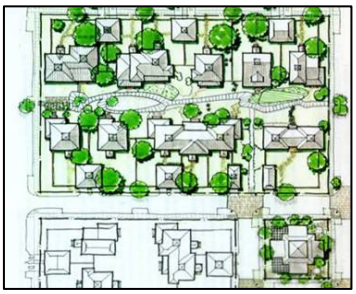

Fig. D.1 – Sustainable design is demonstrated in this site plan by extensive green space.

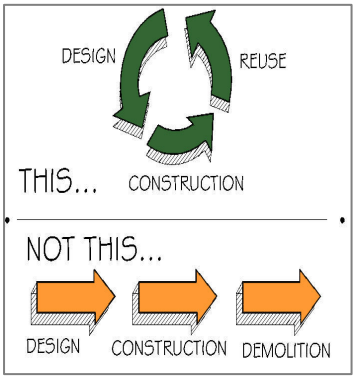

Fig. D.2 – Sustainable Design Process

D.1.2 Designing for sustainability ultimately increases quality of life through better resource protection and use. The design process must incorporate a change in mind-set that embraces less

consumptive lifestyles. This mind-set change must include global interdependence, stewardship of the environment, social responsibility, and economic viability. The new design mind-set must change from the traditional approach to recognize the impacts of every design choice on natural and cultural resources and on local, regional, and global environments.

Fig. D.3 - Energy Efficient Lighting Contributes to Sustainability

D.2 SUSTAINABLE DESIGN AND DEVELOPMENT

D.2.1 Practicing the principles of sustainable design in the planning, design, construction, and operation of infrastructure and facilities is a smart business practice. Protecting our natural resources and reducing our impact on the natural environment is achievable when we create energy efficient (Fig. D.3), healthy (Fig. D.4), high-performance (Fig. D.5), and safe buildings.

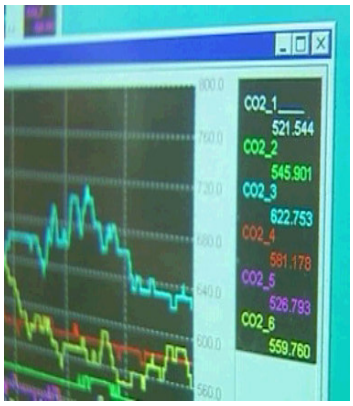

Fig. D.4 - CO2 Measurements of Indoor Air Quality Assisting in Creating a Healthy Environment

D.2.2 The Integrated Design Process. Critical to the success of sustainable design and development is the organization and commitment of the team to engage in the Integrated Design Process. To effect change in building design and operation, the project delivery process itself must become a collaborative effort to integrate design strategies among all disciplines and all players in the project delivery process. Integrated design demands a more inclusive team, working closer together than is traditionally the case. Future building users and facility managers must be invited to join architects, engineers, and planners in developing the vision and goals for new facilities. (Adapted from the HOK Guidebook to Sustainable Design)

D.2.3 This appendix discusses the sustainable design concept and its application to Army projects. Paragraph D.3 discusses the "Leadership in Energy and Environmental Design" (LEED) Green Building Rating System developed by the U.S. Green Building Council. To comply with the Assistant Chief of Staff for Installation Management (ACSIM) endorsement of Sustainable Design and Development initiatives, the LEED Rating System will be used for all projects funded FY08 and later. Because the planning and design process for projects anticipated for funding in FY08 is initiated many months in advance of funding, Fort Stewart has adopted use of the LEED Rating System.

Fig. D.5 - Efficient Water Usage Contributes to a High Performance Facility

As stated on the Green Building Council website, the LEED Green Building Rating System (a trademarked system) is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and

measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. The minimum LEED 2.2 rating requirement is "Silver".

The LEED checklist (Appendix E) is from the U.S. Green Building Council LEED 2.2 (Leadership in Energy and Environmental Design) Green Building Rating System.

D.2.4 Further information on sustainable design can be obtained at the following websites:

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website This site provides information on the following topics: documentation and references; sustainable process, tools, products and materials; Sustainable Design and Development Training; and links to various sustainable design and development informational website.
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website.
- Whole Building Design Guide (WBDG) This site provides comprehensive and current information on sustainable design strategies and technologies.

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- Whole Building Design Guide (WBDG) This site provides comprehensive and current information on sustainable design strategies and technologies.

D.3 SUSTAINABILITY AND THE FEDERAL GOVERNMENT

D.3.1 The Federal Government has led the nation in the energy efficient, resource-conserving building design, construction, and operation. Executive Order (EO) 13123, "Greening the Government through Efficient Energy Management", was issued June 3, 1999. This Order establishes that sustainable design principles shall be applied to all Federal projects in order to reduce pollution and other environmental costs associated with facility construction, operation, and eventual decommissioning. The principles of sustainable design for Federal Agencies established by EO 13123 include siting, design, and construction, as follows (Fig. D.6):

- Site - Optimize site potential.
- Energy – Minimize nonrenewable energy consumption.
- Materials – Use environmentally preferable products.
- Water – Protect and conserve water.
- Indoor Environmental Quality – Enhance indoor environmental quality.
- Facility Delivery – Holistic delivery of facility.
- O&M – Optimize operational and maintenance practices.
- Future Missions – Functional life of facility and support systems.

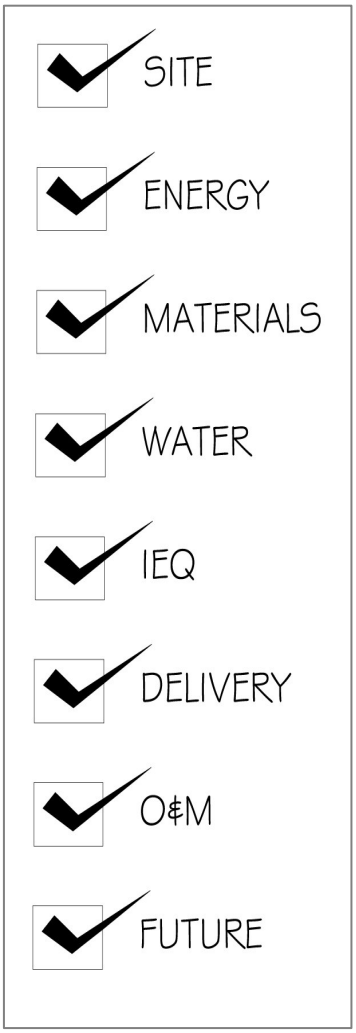

Fig. D.6 – Sustainable Design Principles

D.4 ARMY STANDARDS

The cited Army Standards shall be met.

D.5 REFERENCES

The following references are provided for guidance.

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website

- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research

Laboratory (CERL), Sustainable Design and Development Website

- Air Force Sustainable Facilities Guide
- Whole Building Design Guide

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APPENDIX E
LEED CHECKLIST

The following sample LEED checklist for new construction is used in tabulating the LEED Rating System score for a project. There are other ratings and checklists that may be obtained from the U.S. Green Building Council (www.usgbc.org) for other specific types of projects.

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LEED-NC Version 2.2 Registered Project Checklist

<< enter project name >>
<< enter city, state, other details >>

Yes	?	No			
			Sustainable Sites		**14** Points
Y					
			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density & Community Connectivity**	1
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel-Efficient Vehicles	1
			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
			Credit 5.1	**Site Development,** Protect of Restore Habitat	1
			Credit 5.2	**Site Development,** Maximize Open Space	1
			Credit 6.1	**Stormwater Design,** Quantity Control	1
			Credit 6.2	**Stormwater Design,** Quality Control	1
			Credit 7.1	**Heat Island Effect,** Non-Roof	1
			Credit 7.2	**Heat Island Effect,** Roof	1
			Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
			Water Efficiency		**5** Points
			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

Yes	?	No			
			Energy & Atmosphere		**17** Points
Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**Fundamental Refrigerant Management**	Required
			Credit 1	**Optimize Energy Performance**	1 to 10
			Credit 2	**On-Site Renewable Energy**	1 to 3
			Credit 3	**Enhanced Commissioning**	1
			Credit 4	**Enhanced Refrigerant Management**	1
			Credit 5	**Measurement & Verification**	1
			Credit 6	**Green Power**	1

continued…

Yes	?	No			
			Materials & Resources		**13** Points
Y			Prereq 1	**Storage & Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse**, Maintain 75% of Existing Walls, Floors & Roof	1
			Credit 1.2	**Building Reuse**, Maintain 100% of Existing Walls, Floors & Roof	1
			Credit 1.3	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
			Credit 2.1	**Construction Waste Management**, Divert 50% from Disposal	1
			Credit 2.2	**Construction Waste Management**, Divert 75% from Disposal	1
			Credit 3.1	**Materials Reuse**, 5%	1
			Credit 3.2	**Materials Reuse**,10%	1
			Credit 4.1	**Recycled Content**, 10% (post-consumer + ½ pre-consumer)	1
			Credit 4.2	**Recycled Content**, 20% (post-consumer + ½ pre-consumer)	1
			Credit 5.1	**Regional Materials**, 10% Extracted, Processed & Manufactured Regionally	1
			Credit 5.2	**Regional Materials**, 20% Extracted, Processed & Manufactured Regionally	1
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1

Yes	?	No			
			Indoor Environmental Quality		**15** Points
Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
			Credit 4.2	**Low-Emitting Materials**, Paints & Coatings	1
			Credit 4.3	**Low-Emitting Materials**, Carpet Systems	1
			Credit 4.4	**Low-Emitting Materials**, Composite Wood & Agrifiber Products	1
			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Lighting	1
			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
			Credit 7.1	**Thermal Comfort**, Design	1
			Credit 7.2	**Thermal Comfort**, Verification	1
			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Yes	?	No			
			Innovation & Design Process		**5** Points
			Credit 1.1	**Innovation in Design**: Provide Specific Title	1
			Credit 1.2	**Innovation in Design**: Provide Specific Title	1
			Credit 1.3	**Innovation in Design**: Provide Specific Title	1
			Credit 1.4	**Innovation in Design**: Provide Specific Title	1
			Credit 2	**LEED® Accredited Professional**	1

Yes	?	No			
			Project Totals (pre-certification estimates)		**69** Points

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points

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APPENDIX F
LANDSCAPE MAINTENANCE SCHEDULE

To be completed by the installation.

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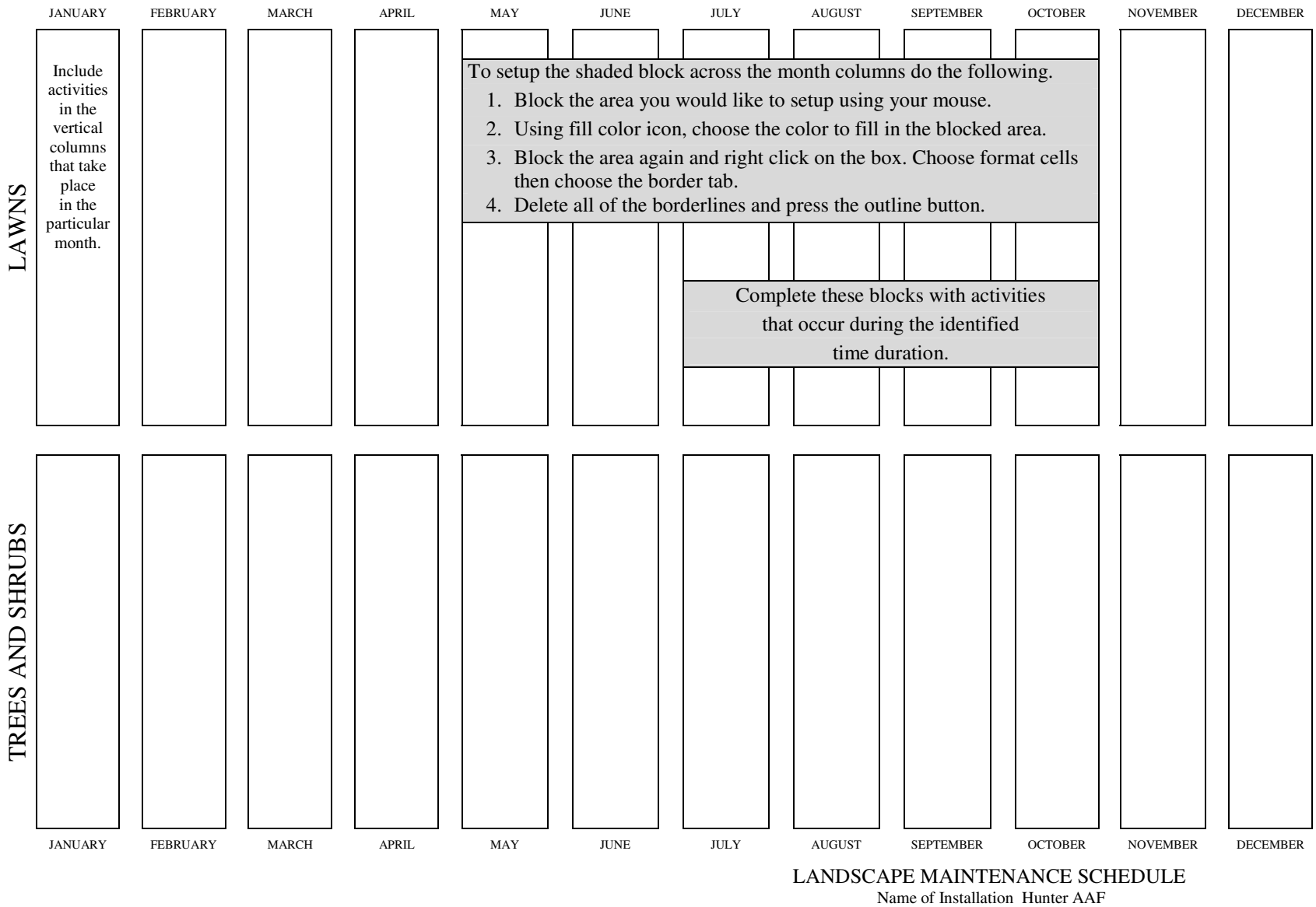

LANDSCAPE MAINTENANCE SCHEDULE

Name of Installation Hunter AAF

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APPENDIX K
EXTERIOR MATERIALS CHARTS

The following tables includes both exterior materials and colors to facilitate making selections.

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		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
Headquarters	**"Significant"** *(Div., BDE & BN HQ)*	**Manufacturer:** Berridge **Color:** Patina Green	- - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Dutch Gray **Accent Colors:** Seal Brown Frontier	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	- - - - - - - - -	**Color:** White or match field brick or CMU	- - - - - - - - -	**Color:** White	- - - - - - - - -
	"Secondary" *(CO OPNS FAC)*	**Manufacturer:** Berridge **Color:** Patina Green Colonial Red	- - - - - - -	↓	↓	↓	**Siding:** Metal; vertical slats **Color:** White	↓	- - - - - - - - -	↓	- - - - - - - - -
	Temporary	- - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend	- - - - - - -	- - - - - - -	- - - - - - -	**Siding:** Metal; vertical slats **Color:** Warm Gray	**Color:** White	- - - - - - - - -	↓	- - - - - - - - -
Town Center	**Retail and Community**	**Manufacturer:** Berridge **Color:** Forest Green	- - - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Dutch Gray Quaker Frontier **Accent Colors:** Cherry Velour Seal Brown	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Metal; vertical slats **Color:** White	**Color:** White or match field brick ↓	- - - - - - - - -	↓	- - - - - - - - -
	Recreation	↓	- - - - - - -	↓	↓	↓	**Siding:** Metal; vertical slats **Color:** White	↓	- - - - - - - - -	↓	- - - - - - - - -
	Temporary	- - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend	- - - - - - - -	- - - - - - -	- - - - - - -	**Color:** Warm Gray	**Color:** White	- - - - - - - - -	↓	- - - - - - - - -

		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
Barracks	**Main Cantonment Area**	**Manufacturer:** Berridge **Color:** Colonial Red	- - - - - - -	**Manufacturer:** Belden Brick **Field Color:** Quaker Frontier **Accent Colors:** Seal Brown Cherry Velour	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Stucco **Color:** Cream	**Color:** White or match field brick or CMU	- - - - - - - - -	**Color:** Barracks-White Ops-Dark Bronze	- - - - - - - - -
	Temporary	- - - - - - -	**Manufacturer:** Georgia Pacific **Color:** Miami Red Ranchwood	- - - - - - -	- - - - - - -	- - - - - - -	↓	**Color:** Match field brick or CMU	- - - - - - - - -	**Color:** Dark bronze	- - - - - - - - -
Installation Support	**Maintenance Facilities**	**Manufacturer:** Berridge **Color:** Shasta White	**Manufacturer:** Georgia Pacific **Color:** Light Gray	- - - - - - -	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Siding:** Metal; vertical slats **Manufacturer:** Chicago Metallic **Color:** Natural Adobe **Brick:** Belden Brick **Color:** Dutch Gray	**Color:** Match CMU or siding. Or use Rust or Maroon	- - - - - - - - -	**Color:** White Rust Maroon	- - - - - - - - -
	General Administration	↓	↓	**Brick:** Belden Brick **Color:** Dutch Gray Quaker	**Manufacturer:** Featherlite **Color:** Beige Rose	↓	**Siding:** Metal; vertical slats **Color:** White	**Color:** White	- - - - - - - - -	**Color:** White	- - - - - - - - -

		Roofs		Walls				Doors and Windows			
Visual Zone	**Building Type**	**Standing Seam Metal**	**Fiberglass Comp. Shingles**	**Brick**	**CMU**	**Concrete**	**Secondary Material**	**Doors**	**Storm Doors**	**Windows**	**Storm Window Frames**
Housing	**All Types**	---------	**Manufacturer:** Georgia Pacific **Color:** Gray	**Brick:** Belden Brick **Accent Color:** Cherry Velour	---------	---------	**Siding:** Metal; horizontal slats **Color:** Olive Green Harvest Yellow Brown Beige	**Color:** White or match brick or siding	**Color:** White	**Color:** White	**Color:** White
Green Space	**All Types**	**Manufacturer:** Berridge **Color:** Colonial Red Forest Green	**Manufacturer:** Georgia Pacific **Color:** Greenwood Blend Miami Red	**Manufacturer:** Belden Brick **Field Color:** Dutch Gray Quaker Frontier **Accent Color:** Seal Brown Cherry Velour	**Manufacturer:** Featherlite **Color:** Texas Cream	**Color:** Warm Gray	**Paint** **Manufacturer:** Sherwin Williams **Color:** Warm Gray Off-White	**Color:** White	↓	↓	↓

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APPENDIX M
HISTORIC PRESERVATION GUIDELINES

M.1 INTRODUCTION

M.1.1 Most of the history and literature about the military does not deal with the topics of Army facility planning and design processes. However, to plan for the future development of an Army installation, it is necessary to understand past planning and development.

M.1.2 In the development of its policies, the Army had to deal with the question of how buildings relate to one another both by use and layout and by architectural characteristics. At least in its earliest phases, this development was not always a conscious formulation of policy so much as it was the immediate response to a given situation. Over the years, there have been different forces affecting the process of military planning in this country, as illustrated by the various districts and zones on Hunter Army Airfield (Hunter AAF).

M.2 HISTORIC PRESERVATION REGULATIONS

M.2.1 The Army's management of historic properties is pursuant to the duties and responsibilities established by Congress under the National Historic Preservation Act (NHPA) of 1966 and its subsequent amendments. This act committed Federal agencies to a program of identification and protection of historic properties on the land they own. The NHPA established the Advisory Council on Historic Preservation (ACHP) to "advise the President and the Congress on matters relating to historic preservation; (and to) recommend measures to coordinate activities of Federal, State, and local agencies" [16 U.S.C. 470j].

M.2.2 The NHPA also created the National Register of Historic Places to designate publicly or privately owned resources and to encourage identification and planning that promotes the compatible use of these properties. The National Register is the official listing of the nation's historic and cultural resources considered worthy of preservation. It includes "districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture" [16 U.S.C. 470a].

M.2.3 Section 106 of the NHPA requires "the head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, buildings, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking" [16 U.S.C. 470f].

M.2.4 Pursuant to its authority in overseeing the nation's historic preservation programs, the Department of the Interior has developed a set of standards and guidelines for projects and activities involving properties listed in or eligible for listing in the National Register. The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation acts as a guide to the Advisory Council and to State Historic Preservation Offices in their procedural review of Federal undertakings. These guidelines should also act as standards for all Federal agencies as they commence planning for any undertaking that has the potential to trigger Section 106 review, thus assuring that all proposed projects would meet Advisory Council and NHPA requirements.

M.2.5 Federal agencies must comply with Section 106 of the NHPA by following a series of procedural steps set forth in 36 CFR Part 800 – Protection of Historic Properties. The Army further explains its policies and procedures in Army Regulation (AR) 200-4, *Cultural Resources Management* and Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*. This Installation Design Guideline is intended to be used in conjunction with the above regulations as well as with the Hunter AAF Integrated Cultural Resources Management Plan (ICRMP).

The procedures in 36 CFR Part 800 establish a review process with the State Historic Preservation Officer (SHPO) on projects subject to Section 106 of the NHPA. The agency official, in this case the Assistant Chief of Staff of Installation Management at Hunter AAF, consults with the SHPO during each step of the Section 106 process: 1) initiate the process; 2) identify historic properties; 3) assess effects of undertaking on historic properties; and 4) resolve any adverse effects.

M.2.6 Fort Stewart has a Programmatic Agreement (PA) with the Georgia SHPO, which streamlines the Section 106 process for all the Installation's construction projects and training and support missions. This PA also applies to Hunter AAF because it is a sub-installation of Fort Stewart. The PA streamlines the Section 106 process when no historic properties are found, establishes categorical exclusions of Installation actions that will not affect historic properties, excludes low-probability and unexploded explosive ordnance (UXO) areas from archaeological survey, establishes a streamlined process for archaeological site mitigation, and mitigates a number of historic railroad and tramline beds.

M.3 STANDARDS AND GUIDLELINES

M.3.1 **Rehabilitation of Historic Properties**

Design and renovation guidelines for historic districts are of necessity much broader than design guidelines for single buildings. Such guidelines must not only address the appropriate architectural style and materials for proposed new buildings, but they must also address how a proposed action within a historic district, such as the SAC Operations Historic District at Hunter AAF, will impact its integrity, that is, its original design intent and historic character.

M.3.1.1 New work should not conflict with the existing architectural character. For example, it should not:

- Be larger in mass or taller than the existing historic buildings and structures.
- Be of a color or material that conflicts visually with the predominant historic colors or materials used in the area.
- Destroy the historic fabric of any existing buildings, structures, or landscape features that are essential character-defining elements within the district.
- Destroy the spatial relationship between or among historic buildings designed as a grouping, including the regular spacing of buildings within a group and views from one to the other or into the grouping as a whole.

M.3.1.2 New work should seek to enhance and protect the historic quality of existing resources. For example:

- Conduct a survey to examine the level of use of existing facilities prior to determining the need for new construction.
- Follow the Secretary of the Interior's Standards for Preservation and Guidelines for Preserving Historic Buildings.

New work should also provide necessary modern conveniences as unobtrusively as possible. For example:

- Site new construction so that it does not destroy existing building relationships or configurations.
- Scale down new buildings so as to minimize their visual impact.
- Place parking to the rear of buildings.
- Landscape parking areas and modern mechanical equipment so as to screen them from view.

M.3.1.3 Phase out (gradually eliminate) existing intrusions. For example:

- Restore buildings that have been altered by inappropriate material changes, replacement windows, porch enclosures, etc.

M.3.2 **Treatment of Historic Fabric**

The most effective way to preserve historic properties is to keep them in use and to consistently maintain them. When buildings and grounds are consistently used for their intended purposes and maintenance is regularly conducted, there is rarely a need for extensive preservation work. Only when they are misused, underused, or left vacant for long periods of time does large-scale rehabilitation become necessary. It follows that if a regular maintenance program is put into effect once a property has been appropriately renovated, then another major rehabilitation would unlikely be required.

M.3.3 **Standards for Historic Preservation Projects**

M.3.3.1 **Compatible use of historic buildings, structures, and sites.** Every reasonable effort should be made to use a historic building, structure, or site for its originally intended purpose or to provide a compatible use. A compatible use is one that involves minimal alteration to the property and/or has no adverse effect upon its historic integrity. Use of the building, structure, and site should be regulated to prevent alterations that are potentially damaging to historic fabric and/or cultural context.

M.3.3.2 **Retention of character-defining features.** Distinguishing stylistic or character-defining features and examples of skilled craftsmanship should not be destroyed, altered, or removed from a historic building, site, or structure. All such fabric should be treated with sensitivity and preserved in its original context and form.

M.3.3.3 **Treatment of deteriorated historic fabric.** Deteriorated historic fabric should be repaired rather than replaced whenever possible. When replacement is unavoidable, the new material should match the old fabric in composition, design, color, texture, and other visual and structural qualities.

M.3.3.4 **Documentation of missing historic elements.** Replacement of missing historic elements should be based on the accurate duplication of features known to have existed and substantiated by historic pictorial and/or physical evidence and not on conjecture, nor simply on the example of similar treatment found on other buildings, structures, or sites of the same period or region.

M.3.3.5 **Retention of historic alterations.** Changes to a historic building, structure, or site that have occurred over the course of time may provide evidence of important social or cultural processes. As such they should be respected and their potential significance carefully evaluated.

M.3.3.6 **Unacceptable alterations.** Historic sites, structures, and buildings should be recognized as products of their own time and as part of an important cultural process. Alterations which have no historical basis or which destroy the authenticity of the place are discouraged.

M.3.3.7 **Acceptable alterations and additions.** When possible, alterations and new additions to historic building, structures, or sites should be done in such a manner as to leave the essential form and character-defining features unimpaired.

M.3.3.8 **Contemporary design in a historic context.** Contemporary design for additions to existing historic sites or districts should not be discouraged if such design is compatible with the massing, proportions, scale, materials, color, views, and general contextual relationships of the place.

M.3.3.9 **Surface cleaning methods.** Surface cleaning of structures or buildings should be undertaken with the gentlest possible means, and only when cleaning is essential to the preservation of the buildings. Cleaning methods that could damage historic material or speed their deterioration (e.g., sand blasting) are discouraged.

M.3.3.10 **Archaeological resources.** All work that potentially affects surface or sub-surface prehistoric or historic archaeological resources should be coordinated with an archaeologist. If National Register eligible or listed archaeological resources must be disturbed, then mitigation measures will be undertaken.

M.3.4 Guidelines for Historic Preservation Projects

The historic preservation and maintenance guidelines contained within this IDG are general in nature. The IDG must be utilized in conjunction with the Hunter AAF ICRMP.

M.3.4.1 Roof Guidelines

- Preserve existing historic roofing. Repair and patch with materials that match the old.
- All roofs should receive an annual inspection. Repair and patch all materials as needed, clean out all gutters and drains, and replace deteriorated flashing.
- When full replacement of the roof becomes necessary, replace or restore with historic materials to match the old.
- Roof details. Retain and/or maintain all existing chimneys, ventilators, vents, louvers, and decorative elements such as brackets, dentils, and cornices. When possible, restore missing decorative elements.

M.3.4.2 Wall Guidelines

- Limestone and brick masonry
  - Clean only when necessary using the gentlest possible means.
  - Repair or replace deteriorated or missing units as needed with physically (size, material) and visually (color, texture) compatible masonry.
- Stucco
  - Repair damaged or deteriorated stucco.
  - Repaint only when necessary and with the appropriate color based on analysis of historic paint layers.

- Wood
  - Retain or repair wood siding. Where replacement is necessary, match existing clapboards in width and species.
  - Repaint only as needed to protect the wood from moisture.
  - Use a color paint scheme based on analysis of historic paint layers.

M.3.4.3 Porch Guidelines

- Retain or maintain existing original porches.
- Remove historically inappropriate porches.
- Where possible, restore original porches that have been removed or enclosed.

M.3.4.4 Window Guidelines

- If building an addition or altering the building, retain the same window height as existing.
- Retain the same window size and fenestration pattern when replacing windows or altering the building.
- If replacing windows, preserve frame material or use historically accurate reproductions. Avoid replacing original frames with aluminum frames.
- Restore historic windows where non-historic replacement windows have been used.
- The window manufacturing industry can replicate and/or reproduce most types and sizes of windows to match existing historic windows. In many cases, matching replacement windows are available as stock items.

M.3.4.5 Door Guidelines

- Retain or maintain existing historic doors.
- If replacing doors, preserve frame material or use historically accurate reproductions.
- If building an addition or altering the building, maintain the size of the door opening.
- Restore all main entranceways by reinstalling appropriate frames.

M.3.4.6 Color Guidelines

- If historic buildings must be repainted before an accurate color scheme is developed, a very conservative approach should be followed. Repaint to match the existing colors or colors that can be documented to have been used on that building.
- Utilize a qualified historic paint color specialist for an inventory and analysis of the paint layer sequences for all building groupings.
- Establish a rotating schedule for the painting and cleaning of each building.

M.3.4.7 Painting Guidelines

- Do not undertake a paint job until any problems with leaking water have been solved. All gutters and downspouts should be repaired and be in good operating condition.
- Only repaint when the existing coat is no longer performing, as excessive coats of paint create a thick film, which obscures detail.

M.3.4.8 Handicap and Safety Access Guidelines

- Any modifications required to bring a historic building in compliance with safety and accessibility codes should be carefully planned and undertaken so that they do not adversely affect the design of main entrances or principal façades.
- Where possible, avoid alterations to the main façade and principal doorways.
- Place or install new ramps, lifts, and any added fire escapes on secondary building façades such as to the side or rear.
- Locate new doorways at the side or rear of the building.
- Required protective railings on ramps, stairs, steps, and lifts should match existing porch railings.

M.3.4.9 Mechanical Equipment Guidelines

- In many cases within historic districts, mechanical equipment is located outside of the building. When historic buildings or structures are renovated and mechanical systems are upgraded, equipment placement should be planned in order to make the least visual impact.
- Where possible, locate mechanical equipment within the building.
- Screen necessary surface equipment with vegetation.
- When large groups of buildings are upgraded as one project, consider the use of a remote system.

M.3.4.10 Guidelines for Additions

In general, additions should follow all the guidelines for new construction within historic districts; however, because their proximity makes the potential for damage to historic fabric even greater, there are additional principles that should be followed.

- Avoid changes that impact primary façades or obscure, damage, or destroy character-defining features.
- Some highly visible freestanding buildings may not have a secondary façade; thus, additions are not advisable.
- Design additions to be compatible in scale, form, and features to the existing historic building.
- Design additions to establish a clear and obvious difference between the existing historic building and the new addition.

M.3.4.11 **Force Protection.** These guidelines should be used in conjunction with the Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* and the Force Protection Design Standards of this Army Installation Design Guide and Standards.

M.4 ARMY STANDARDS

- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- *The Secretary of the Interior's Standards for the Treatment of Historic Properties*

M.5 REFERENCES

- Advisory Council on Historic Preservation
- United States Army Environmental Center Cultural Resources Management Program - Historic Buildings and Landscapes
- United States Army Environmental Center Cultural Resources Management Program - Native American Affairs
- United States Army Environmental Center Cultural Resources Management Program - Archeology

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APPENDIX N
HOUSEKEEPING RULES (EXAMPLE)

This appendix will be modified by the installation to describe practices at Hunter AAF.

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HOUSEKEEPING RULES

INTRODUCTION

N.1 The following set of housekeeping rules consists of a list of general and public rules that are applicable to the administrative office work areas throughout the installation. Organizations should make every effort to assure that all personnel are familiar with the facilities housekeeping rules. An organized, well kept working area that is neat and clean contributes to the visual harmony of the work area and fosters work efficiencies.

N.2 Housekeeping Rules (*Example*). Modify as appropriate.

Housekeeping Rules for (*Enter Name of Organization*)

GENERAL RULES:

1. Alterations: Employees shall not mark, paint, drill, damage, string wires within, or in any way deface any part of the building. Employees will not install or permit the installation of any awnings, shades, Mylar films or num filters on windows. Employees will not obstruct, alter, or in any way impair the efficient operation of the heating, ventilating, air conditioning, electrical, fire safety, or lighting systems, nor shall the employee tamper with or change the setting of any thermostat or temperature control valve in the building. Employees shall not cover or block air ducts or vents.

2. Cleanliness: Employees shall exercise their best efforts to keep workstations and common areas, i.e., hallways, corridors, team rooms, etc., clean and free form rubbish. No employee shall cause any unnecessary labor on the part of cleaning personnel due to carelessness or indifference in the preservation of good order and cleanliness. It is highly recommended that employees use covered cups when transporting liquids to and from the coffee bars. Employees shall not bring any substance into the building that might add an undue burden to the cleaning or maintenance of the premises, or the building.

3. Carpet: Carpet stains and/or damage should be reported to (Enter Point of Contact [POC]).

4. Energy Conservation: Turn off systems furniture lighting, conference room lights, private office lights and equipment, etc. when not in use, especially at the end of the day. During non-business hours, employees shall limit the use of lighting and equipment to areas occupied.

5. Lighting: Do not move and /or modify any overhead lighting fixtures above workstations. One task light may be placed in a workstation.

6. Vertical and Venetian Blinds: Blinds are to be left in fully extended position at all times. Blades shall be positioned so as to permit a good level of natural lighting and shall only be closed for the purposes of sun control and at night for privacy. Only the wands will be used for adjustments. Items shall not be placed or stored on windowsills other than small plants as described hereinafter.

7. Signage: No signs, advertisements or notes shall be painted or affixed on or to any window, door, restroom conference/team room or other part of the building unless approved by (Enter POC). Bulletin boards for posting of unofficial material are restricted to communal areas such as break rooms and coffee bars.

8. Bicycles: Employees shall not bring bicycles or motorcycles into the office environment, but shall be left secured in an upright position in areas designated for that purpose.

9. Aerosol Sprays: The use of aerosol products such as air fresheners, hair sprays, etc., in the work environment should be avoided.

10. Maintenance: All requests for maintenance on furnishings, or building systems or components should be reported to (Enter POC [there may be more than one POC]).

11. Smoking: The use of tobacco products inside any Army facility is strictly prohibited. Smoking of tobacco products may only occur in designated areas where proper ash receptacles, which are kept free of trash and debris, are located.

PUBLIC SPACES:

1. Eating in Work Areas: Eating in work areas can contribute to pest infestation and an unsightly appearance. If eating at your desk, please ensure trash is discarded daily. Perishable food items should not be stored in the employees' work area. Perishable foods are to be kept refrigerated.

2. Appliances (e.g., Heaters/Refrigerators/Microwaves/Coffee Pots): Refrigerators and microwaves are not permitted in work areas. One personal fan, not to exceed 8" in diameter may be placed in a workstation. Exceptions to accommodate health problems may be submitted to (Enter POC).

3. Centralization: Copiers, faxes, scanners, printers, etc., will be centralized and networked to the maximum extent possible. Personal office equipment will be provided on an exception basis only.

4. Office Accessories: All office equipment and other devices of any electrical or mechanical nature shall be placed on an area of the work surface that best accommodates the prevention/elimination of any vibration, noise or annoyance to others. Employees shall not construct, maintain, use or operate any equipment of machinery that produces music, sound, noise, pictures, or lighting which is audible or visible beyond their workstation.

5. Office Wall Mountings: Only framed items shall be hung on walls. No artwork or other displays may be placed or hung on fixed or temporary walls/partitions, other than in private offices, without approval by (Enter POC). The use of tape, pushpins, or other devices to affix items to walls is prohibited.

6. Plants: Plants must be contained in appropriate leak-proof non-corroding containers such as ceramic jardinières or flower pots with saucers and shall be kept within workstations and not affixed in any way to the workstation, partitions, floors, or ceiling as outlined in the guidance detailed elsewhere in this document; this prohibition extends to trailing vines. Small plants that do not interfere with the normal operation of window blinds may be placed on windowsills. Watering of plants shall not subject any government equipment to risk of damage.

7. Speakerphones: The use of speakerphones is discouraged and should be restricted to those occasions when absolutely necessary. Concerted efforts must be made to utilize team rooms when speakerphone conversations are required.

8. Trash: The janitorial contractor will discard only items in wastebaskets or items clearly labeled "TRASH". Do not place trash in the corridors, hallways, stairwells, or other common areas.

9. Workstation Reconfiguration: Workstations will not be reconfigured, modified, or altered in any way by the occupant.

10. Workstation Guidelines: Every employee shall make a concerted effort to keep workstations clean, uncluttered, and professional in appearance. Avoid placing papers and other "hard copy" materials on the wall of the workstation and the accumulation of excessive pictures/cartoons/mementos. The storage of papers, boxes, and files on floors is prohibited. Materials are not to be hung on the outside panels of workstations.

    a. Above the Panels: Nothing will be placed above the panel height of the workstations or hung from the ceiling. Nothing will be stacked on the tops of flipper doors, map files, filing cabinets, towers, etc.

    b. Cabling: No temporary cabling for electrical, information technology, or communications is allowed. Requests for alterations must be submitted to (Enter POC). This prohibition includes extension cords; surge protectors are permitted. Wiring is to be contained in cable trays and off the floors.

11. Care of Furniture and Furniture Systems

    a. Laminate Surfaces – To clean laminate tops, use a soft cloth or non abrasive sponge dampened in a solution of mild detergent and warm water. Remove residue of cleaning solution with a soft cloth wrung out in clean water. Dry with a soft cloth.

    b. Steel and Painted Metal Surfaces – Panel trim, panel poles, painted flipper doors, and other parts of flipper doors should be cleaned with a soft damp cloth and thoroughly dried with a soft dry cloth. For soiled areas a mild detergent solution in warm water may be used.

    c. Fabric – For information on how to remove spots from fabric panels on workstations, contact (Enter POC).

APPENDIX O
PLANT PALETTE

The following table lists the plant material that are permitted for use on Hunter AAF. The table includes information on characteristics of each plant related to their appearance, recommended uses and growing conditions.

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PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
SHADE TREES																															
Acer rubrum	Red Maple	X				X						X	X	X	X						X	X		X	X		X				X
Betula nigra	River Birch	X				X					X			X						X	X	X			X		X				X
Liriodendron tulipifera	Tulip Poplar	X				X			X	X		X			X							X			X		X				X
Magnolia grandiflora	Southern Magnolia		X			X			X	X		X		X	X					X		X		X	X		X				X
Platanus occidentalis	London Planetree	X				X						X		X	X						X	X		X	X		X				X
Quercus falcata	Southern Red Oak	X		X								X		X	X							X		X	X		X				X
Quercus laurifolia	Laurel Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus phellos	Willow Oak	X		X								X		X	X						X	X		X	X		X				X
Quercus shumardii	Shumard Oak	X		X								X		X	X					X	X	X		X	X		X				X
Quercus virginiana	Live Oak	X		X								X		X	X					X	X	X		X	X		X				X
INTERMEDIATE TREES																															
Carpinus caroliniana	Blue Beech	X				X						X	X	X							X	X									X
Cercis Canadensis	Redbud	X				X			X	X			X	X	X				X	X		X					X				X
Cornus florida	Flowering Dogwood	X		X					X	X		X	X	X					X	X		X					X				X
Koelreuteria paniculata	Goldenrain Tree	X				X		X				X			X				X	X	X	X	X		X						X
Lagerstroemia indica	Crapemyrtle	X		X			X	X		X	X	X			X							X					X				X
Magnolia soulangeana	Saucer Magnolia	X		X					X	X	X		X	X						X		X			X						X
Magnolia virginiana	Sweet Bay Magnolia		X	X					X	X	X	X	X	X						X	X	X			X		X				X
Myrica cerifera	Southern Wax Myrtle		X			X			X			X		X	X					X		X				X	X				X
Nyssa sylvatica	Black Tupelo	X		X								X		X	X					X	X	X					X				X
Pyrus calleryana ‘Aristocrate’	Aristocrat Pear	X				X			X	X		X			X				X	X		X	X								X
Sapium sebiferum	Chinese Yellowtree	X				X		X				X		X						X	X	X	X		X						X
Taxodium distichum	Common Bald Cypress	X				X					X	X		X	X						X	X		X			X				
EVERGREEN TREES																															
Butia capitata	Butia Palm		X	X								X			X							X					X				X
Eriobotrya japonica	Loquat		X	X			X			X		X		X	X				X		X	X				X	X				X
Juniperus virginiana	Eastern Red Cedar		X			X					X			X	X					X		X	X			X	X	X			X
Pinus elliottii	Slash Pine		X			X						X		X	X							X				X	X	X			X
Pinus palustris	Longleaf Pine		X			X						X		X	X							X				X	X	X			X
Sabal palmetto	Cabbage Palmetto		X	X								X			X					X		X		X			X				X
Trachycarpus fortunei	Windmill Palm		X	X								X			X				X			X	X	X			X				X

PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
EVERGREEN SHRUBS																															
Buxus microphyllum	Japanese Boxwood		X	X			X			X		X		X	X						X	X					X		X	X
Camellia sasanqua	Fall-blooming Camellia		X	X			X			X		X		X	X						X	X				X				X
Cotoneaster horizontalis	Rockspray Cotoneaster		X	X								X		X	X							X					X			X
Cycas revolute	Sago Cycas		X	X								X		X	X					X		X					X			X
Elaeagnus pungens	Thorny Elaeagnus		X			X						X	X	X	X					X		X	X			X				X
Fatsia japonica	Japanese Fatsia		X	X			X			X		X		X	X							X					X			X
Hypericum patulum 'Sungold'	Sungold Hypericum		X			X		X		X		X		X	X				X	X		X	X				X			X
Ilex cornuta 'Burfordii'	Burford Holly		X	X								X		X	X					X		X				X	X			X
Ilex cornuta 'Carissa'	Carissa Holly		X	X								X		X	X				X	X		X				X	X			X
Ilex cornuta 'Rotunda'	Dwarf Chinese Holly		X	X								X		X	X				X	X		X				X	X			X
Ilex crenata	Japanese Holly		X	X								X		X	X					X		X				X	X		X	X
Ilex crenata 'Helleri'	Heller Japanese Holly		X	X								X		X	X							X					X		X	X
Ilex opaca 'Fosteri'	Fosters Holly		X	X								X		X	X					X		X				X				X
Ilex opaca 'Savannah'	Savannah Holly		X	X								X		X	X					X		X				X				X
Ilex vomitoria	Yaupon Holly		X	X								X		X	X					X		X				X	X			X
Ilex vomitoria 'Stokes dwarf'	Dwarf Yaupon Holly		X	X								X		X	X					X		X				X	X			X
Illicium parviflorum	Yellow Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X			X
Illicium floridanum	Florida Anise-Tree		X			X	X			X		X	X	X	X					X	X	X					X			X
Juniperus chinensis 'Torulosa'	Hollywood Torulosa Juniper		X	X								X			X							X								X
Juniperus chinensis 'Pfitzeriana'	Pfitzer Juniper		X	X								X			X				X			X	X				X			X
Juniperis conferta	Shore Juniper		X	X								X			X				X			X	X				X			X
Juniperus horizentalis 'Plumosa'	Andorra Juniper		X	X								X			X				X			X	X				X			X
Ligustrum japonicum	Japanese Privet		X			X			X	X		X		X	X				X			X				X	X			X
Ligustrum lucidum	Golden Privet		X			X			X	X		X		X	X				X			X				X	X			X
Mahonia bealei	Leatherleaf Mahonia		X	X					X	X		X	X	X								X					X			X
Nandina domestica	Heavenly Bamboo		X			X			X	X		X	X	X	X				X		X	X	X				X			X
Osmanthus americanus	Devilwood Osmanthus		X	X			X			X		X	X	X						X		X								X
Osmanthus fragrans	Fragrant Tea Olive		X			X	X			X		X	X	X						X		X				X	X			X
Photinia serrulata	Chinese Photinia		X			X			X	X		X		X	X							X	X			X	X			X
Pittosporum tobira	Japanese Pittosporum		X			X			X	X		X	X	X	X							X	X			X	X			X

PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
Podocarpus marcrophyllus 'Maki'	Shrubby Yew Podocarpus		X	X					X	X		X	X	X	X				X	X		X	X			X	X	X			X
Prunus caroliniana	Cherry Laurel		X	X					X	X		X		X	X							X				X					X
Pyracantha coccinea	Scarlet Firethorn		X			X		X		X					X							X					X				X
Raphiolepis indica	Indian Hawthorn		X	X					X	X		X	X	X	X				X		X	X	X				X				X
Rhododendron indicum	Indica Azalea		X			X			X	X		X	X	X							X	X					X				X
Rhododendron obtusum	Kurume Azalea		X	X					X	X		X	X	X							X	X					X				X
Ternstroemia gymnathera	Japanese Cleyera		X	X					X	X		X		X	X				X	X		X	X			X	X				X
Viburnum odoratissumum	Sweet Viburnum		X			X			X			X		X								X	X			X	X				X
DECIDUOUS SHRUBS																															
Clethra alnifolia	Summersweet Clethra	X				X		X		X			X	X	X					X		X					X				X
Hibiscus syriacus	Shrub Althea	X		X						X			X	X	X					X		X	X				X				
Hydrangea macrophylla	Bigleaf Hydrangea	X				X		X		X			X	X							X	X					X				X
Hydrangea quercifolia	Oakleaf Hydrangea	X				X		X		X	X			X	X					X		X					X				X
Jasminum nudiflorum	Winter Jasmine	X		X					X	X			X	X	X				X	X		X	X				X				X
Lonicera fragrantissima	Winter Honeysuckle	X				X			X	X			X	X						X		X				X	X				X
Spiraea thunbergii	Thunberg Spirea	X				X		X		X					X							X					X				X
Spiraea x vanhouttei	Vanhoutte Spirea	X				X		X		X					X							X					X				X
GROUNDCOVERS/VINES																															
Ajuga reptans	Carpet Bugle	X				X			X	X		X	X	X	X				X	X	X	X	X				X				
Euonymus fortunei 'Radicans'	Common Wintercreeper		X	X								X		X	X							X					X				
Hedera canariensis	Algerian Ivy		X	X						X			X	X						X		X					X				
Hedera helix	English Ivy		X	X						X			X	X						X		X					X				
Hemerocallis	Daylilly	X				X	X	X		X		X		X	X					X		X					X				
Juniperus chinensis 'Sargentii'	Sargent Juniper		X	X								X		X	X							X	X				X				
Juniperus conferta 'Blue Pacific'	Blue Pacific Juniper		X	X								X		X	X							X	X				X				
Juniperus horizentalis	Creeping Juniper		X	X								X		X	X							X	X				X				
Juniperus procumbrens	Japgarden Juniper		X	X								X		X	X							X	X				X				
Vinca major	Bigleaf Periwinkle		X			X			X	X		X		X	X							X					X				

PLANT SELECTION LIST
Plant Material Suitability Matrix

Botanical Name	Common Name	Type		Growth			Flower			Interest			Light			Salt Tolerant			Resistant		Soil Moisture			Function							
		Deciduous	Evergreen	Slow	Medium	Fast	Fall	Summer	Spring	Flower	Bark	Foliage	Shade	Sun/shade	Sun	Low	Medium	High	Drought	Pest	Moist	Average	Dry	Street tree	Shade tree	Screen	Massing	Windbreak	Hedge	Bank cover	Specimen
		Characteristics														Culture								Use							
GRASSES																															
Axonopus affinis	Carpet Grass	X				X						X		X								X					X				
Cortaderia selloana	Pampas Grass	X				X		X		X			X	X	X					X		X	X				X				X
Cynodon dactylon 'Tiflawn'	Common Bermuda Grass	X				X						X			X							X					X				
Ermochloa ophiuroides	Centipede Grass	X		X						X				X	X							X					X				
Liriope muscari	Big Blue Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Liriope spicata	Creeping Lilyturf	X				X		X		X		X	X	X					X			X	X				X				
Stenotaphrum secundatum	St. Augustine Grass	X				X						X	X									X					X				

APPENDIX P
ARMY FACILITIES STANDARDIZATION PROGRAM CENTERS OF STANDARDIZATION

P.1 General. The various facility types are listed with contact information according to the Center of Standardization (COS) responsible for development of standards for that facility type.

P.3 Specific Contact Information. For more specific contact information, such as POC with email address and telephone number, refer to the IDS Newsletter (https://secureapp2.hqda.pentagon.mil/acsimnews/) under the heading "Standardization Program POCs". An Army Knowledge Online (AKO) account will be required to access the information which includes the Category Code, Army Proponent, ACSIM Proponent, HQUSACE POC, and HQIMA POC.

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Army Facilities Standardization Program Centers of Standardization	
Assigned Center	Facility Type
U.S. Army Engineering and Support Center, Huntsville Attn: CEHNC-ED-CS-A and IS P.O. Box 1600 Huntsville AL 35807 Telephone: 256-895-1673/1672/1535	Child Development Center-Infant/Toddlers
	Child Development Center Playground
	Child Development Center – 6 to 10 Year Olds
	Physical Fitness Facilities
	Fire Station
	Hazardous Material Storage Facility
	Outdoor Sports Facility
	Close Combat Tactical Trainer (CCTT)
	Urban Assault Course (UAC) *replaces: Military Operations Urban Terrain (MOUT)*
	Training Range
	Youth Activity Center
	Bowling Center (RFP)
	Army Community Service Centers
	Consolidated Fire/Police/Safety Facility
U.S. Army Engineer District, Louisville ATTN: CELRL-ED-D-A 600 Martin Luther King Jr. Place Louisville, KY 40202 Tel: 502-315-6250	Army Reserve Center
U.S. Army Engineer District, Norfolk ATTN: CENAO-TS-EA 803 Front Street Norfolk, VA 23510 Telephone: 757-441-7702	Classroom XXI
	Criminal Investigation Facility (CIDC)
	Enlisted Personnel Dining Facility
	Family Housing (RFP)
	General Instruction Building
	Information Systems Facility
	Troop Issue Subsistence Activity Facility (TISA)
	Central Issue Facility
	General Purpose Warehouse
U.S. Army Engineer District, Omaha ATTN: CENWO-ED-DG/PM-M 215 North 17th Street Omaha, NE 68102 Telephone: 402-221-4552/443	Army Chapel
	Chapel Family Life Center
	Religious Education Facility
	Small Site Chapel
	Access Control Points
	Airfields, Railroads, Pavements, Bridges, & Dams

Army Facilities Standardization Program Centers of Standardization	
Assigned Center	Facility Type
U.S.Army Engineer District, Mobile ATTN:CESAM-PM-SI P.O. Box 2288 Mobile, AL 36652-2288 Telephone: 251-394-3600	National Guard Armory
U.S. Army Engineer District, Savannah ATTN: CESAS-EN-E P.O. Box 889 Savannah, GA 31402 Telephone: 912-652-5212	Company Operations Facility (COF)
	Military Entrance Processing Station (MEPS)
	Tactical Equipment Maintenance Facility (TEMF)
	Unaccompanied Enlisted Personnel Housing (UEPH), New & Modernization
	One Station Unit Training (OSUT) Barracks
	Unaccompanied Officer / Sr. Enlisted / Quarters
	Unaccompanied Officer Quarters, Transient
	Brigade / Battalion HQ
	Operational Readiness Training Complex (ORTC)
	Deployment Facility
	*Advanced Individual Training (AIT) Barracks
	*Basic Combat Trainee (BCT)
U.S. Army Engineer District, Tulsa ATTN: CESWT-EC-D 1645 S. 101ST East Avenue Tulsa, OK 74128 Telephone: 918-669-7033	*Advanced Individual Training (AIT) Barracks
	*Basic Combat Trainee (BCT)
	Reception Barracks
*AIT & BCT to be transferred to Savannah, upon completion by Tulsa.	
CFSC Telephone: 703-681-1506	Army Lodging
	Clubs/FBE Facilities
	Golf Courses
	Recreational Lodging

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APPENDIX Q
STANDARDS AND REFERENCES

Q.1 STANDARDS AND REFERENCES

Standards and References for the Army Installation Design Standards (IDS).

Q.1.1 Chapter 2, Site Planning Design Standards

Q.1.1.1 Army Standards

- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 415-15, *Army Military Construction Program Development and Execution*
- Army Regulation (AR) 420-70, *Buildings and Structures*

Q.1.1.2 References

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design*, Chap 7
- Unified Facilities Criteria (UFC) *3-400-01*, Design: Energy Conservation
- Unified Facilities Criteria (UFC) *3-210-01A*, Design: Area Planning, Site Planning, and Design
- Unified Facilities Criteria (UFC) *3-210-06A*, Design: Site Planning and Design
- Unified Facilities Criteria (UFC) *3-230-15FA*, Design: Subsurface Drainage Facilities for Airfields and Heliports

- Unified Facilities Criteria (UFC) *3-230-16FA,* Design: Drainage and Erosion Control Structures for Airfields and Heliports
- Unified Facilities Criteria (UFC) *3-230-17FA,* Design: Drainage for Areas Other than Airfields
- Unified Facilities Criteria (UFC) 3-250-18FA, Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
- Unified Facilities Criteria (UFC) *3-260-02,* Design: Pavement Design for Airfields
- Unified Facilities Criteria (UFC) *3-250-01FA,* Design: Pavement Design for Roads, Streets, Walks and Open Storage Areas
- Unified Facilities Criteria (UFC) 1-300-05A, Installation Support
- Technical Instructions (TI) 800-01, *Design Criteria*
- Technical Instructions (TI) 801-02, *Family Housing*
- Master Planning Instructions (MPI)
- Whole Building Design

Q.1.2 Chapter 3, Building Design Standards

Q.1.2.1 Army Standards

- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Unified Facilities Criteria (UFC) 3-520-01, *Interior Electrical Systems*
- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- UFC 4-171-05, *Design: Guide for Army Reserve Facilities*
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Secretary of the Interior's Standards for the Treatment of Historic Properties
- Technical Manual (TM) 5-807-10, *Signage*
- Technical Instructions (TI) 809-04, *Seismic Design for Buildings*
- Technical Instructions (TI) 809-05, *Seismic Design Evaluation and Rehabilitation for Buildings*
- Technical Manual (TM) 5-809-10/Navy NAVFAC P-355/Air Force AFM 88-3, Chap 13, *Seismic Design for Buildings*
- Technical Manual (TM) 5-809-10-2/Navy NAVFAC P-355.2/Air Force AFM 88-3, Chap 13, Sec B, *Seismic Design Guidelines for Upgrading Existing Buildings*
- Army Barracks Master Plan, Appendix I, Army Barracks Standards

- Memorandum Subject: Revised Barracks Construction Criteria, dated 1 May 2003
- Quality Standards for New and Replacement Residential Communities Initiative (RCI) Family Housing
- Army Lodging Standards
- Army Chapel Standard Definitive Design
- Army Standard for Chapel Construction – January 2004 and Memorandum for Record, subject: The Army Standards for Chapels, dated 21 January 2004.
- Army Standards for Company Operation Facility (COF)
- Army Standards for Child Development Center Construction (for school-age children) October 2004

Q.1.2.2 References

- Army Regulation (AR) 190-13, *The Army Physical Security Program*
- Army Regulation (AR) 200-1, *Environmental Protection and Enhancement*
- Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*
- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Army Regulation (AR) 210-20, *Master Planning for Army Installations*
- Army Regulation (AR) 405-45, *Real Property Inventory Management*
- Army Regulation (AR) 405-70, *Utilization of Real Property*
- Unified Facilities Criteria (UFC) 2-600-01, *Installation Design,* Chap 8
- Unified Facilities Criteria (UFC) 4-510-01, *Design: Medical Military Facilities*
- Unified Facilities Criteria (UFC) 1-200-01, *Design: General Building Requirements*, 31 July 2002
- Unified Facilities Criteria (UFC) *3-400-01,* Design: Energy Conservation
- Engineering Regulation (ER) 1110-345-122, *Engineering and Design, Interior Design*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- U.S. Army Corps of Engineers, Design Guide (DG) 1110-3-122, *Design Guide for Interiors*
- Department of Defense (DoD) Interior Design Website
- Technical Instructions (TI) 800-01, *Design Criteria*
- Technical Instructions (TI) 811-16, *Lighting Design*
- Technical Manual (TM) 5-683, *Electrical Interior Facilities*

- Technical Manual (TM) 5-688, *Foreign Voltage and Frequencies Guide*
- Army Barracks Master Plan
- Air Force Sustainable Facilities Guide
- Air Force Interior Design Guides
- Office of the Assistant Secretary of the Army for Financial Management and Comptroller (OASA [FM&C]) Sales and Outlease of Army Assets - Installation Guide
- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Whole Building Design Guide
- Unified Facilities Guide Specifications (UFGS), "Division 12 - Furnishings", Construction Criteria Base
- Engineering and Construction Bulletins

Q.1.3 Chapter 4, Circulation Design Standards

Q.1.3.1 Army Standards

- Army Regulation (AR) 420-72, *Transportation Infrastructure and Dams*
- Technical Manual (TM) 5-811-1/Air Force AFJMAN 32-1080, *Electric Power Supply and Distribution*
- Technical Manual (TM) 5-850-2/Air Force AFJMAN 32-1046, *Railroad Design and Rehabilitation*
- Manual For Railway Engineering
- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 3-210-02, Design: POV Site Circulation and Parking
- Unified Facilities Criteria (UFC) 3-250-18FA, Design: General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
- Unified Facilities Criteria (UFC) 3-260-02, Design: Pavement Design for Airfields
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Manual of Uniform Traffic Control Devices (MUTCD)

- Chicago's Bike Lane Design Manual (Provides a comprehensive series of technical drawings and design specifications for bike lanes).

Q.1.3.2 References

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 9
- U.S. Air Force, Landscape Design Guide, Parking Area
- U.S. Air Force, Landscape Design Guide, Walkways and Bikeways (Provides a comprehensive walkways and bikeways planning guide including sections on paving materials and gradients and curvature data).
- Illumination Engineering Society of North America (IESNA)
- Federal Highway Administration reference document "Accessible Sidewalks and Street Crossings – an informational guide".

Q.1.4 Chapter 5, Landscape Design Standards

Q.1.4.1 Army Standards

- Unified Facilities Criteria (UFC) *3-210-05FA,* Design: Landscape Design and Planting Criteria
- Army Regulation (AR) 420-70, *Buildings and Structures*
- Technical Manual (TM) 5-630, *Natural Resources Land Management*
- American Standard for Nursery Stock, ANSI Z60.1
- Overseas (Host Nation Standards)

Q.1.4.2 References

- Unified Facilities Criteria (UFC) *2*-600-01, *Installation Design,* Chap 10
- USAF Landscape Design Guide
- Brickell and D. Joyce. Pruning and Training, 1996

Q.1.5 Chapter 6, Site Elements Design Standards

Q.1.5.1 Army Standards

- DoD 4525.8-M, DoD Official Mail Manual
- Army Regulation (AR) 420-49, Utility Services
- Army Regulation (AR) 420-70, Buildings and Structures
- Army Regulation (AR) 420-72, Transportation Infrastructure and Dams
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Uniform Federal Accessibility Standards (UFAS)
- Technical Manual (TM) 5-807-10, Signage

- Manual of Uniform Traffic Control Devices (MUTCD)
- MTMC Pamphlet 55-14, Traffic Engineering for Better Signs and Markings
- Unified Facilities Criteria (UFC) 4-010-01, DoD Minimum Antiterrorism Standards for Buildings

Q.1.5.2 References

- Unified Facilities Criteria (UFC) 2-600-01, Installation Design
- Army Regulation (AR) 1-33, Memorial Programs
- Army Regulation (AR) 840-1, Department of the Army Seal, and Department of the Army Emblem and Branch of Service Plaques
- Technical Instructions (TI) 811-16, Lighting Design
- Technical Manual (TM) 5-663, Child Development Center, Play Area Inspection and Maintenance Program
- Unified Facilities Criteria (UFC) 3-210-04, Design: Children's Outdoor Play Areas
- National Fire Protection Association (NFPA) 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants
- Advisory Circular AC 70/7460-1K, Obstruction Marking and Lighting

Q.1.6 Chapter 7, Force Protection Design Standards

Q.1.6.1 Army Standards

- Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*
- Unified Facilities Criteria (UFC) 4-010-10, *DoD Minimum Antiterrorism Standoff Distances for Buildings*. (This document is a "For Official Use Only [FOUO]" publication.)
- Uniform Federal Accessibility Standards (UFAS)
- Americans with Disabilities Act Accessibility Guideline (ADAAG)
- DoD Instruction 2000.16, DoD Antiterrorism Standards

Q.1.6.2 References

- Unified Facilities Criteria (UFC) 2-600-01, Installation Design
- DoD Handbook 2000.12-H, *Protection of DoD Personnel and Activities Against Acts of Terrorism and Political Turbulence*, February 1993 (This Handbook is a "For Official Use Only [FOUO]" publication. Users may contact the Point of Contact posted at the following website to obtain a copy of the Handbook). http://www.dtic.mil/whs/directives/corres/html/o200012h.htm

- Army Regulation (AR) 525-13, The Army Force Protection Program (Available only through the Army Knowledge Online web portal).
- UFC 4-010-02, *DoD Security Engineering Manual,* (This document is in draft form. See the Security Engineering Working Group website).
- Unified Facilities Criteria (UFC) Security Engineering series, UFC 4-020-01FA, UFC 4-020-02FA, UFC 4-020-03FA and UFC 4-020-04FA, cover, Project Development, Concept Design, Final Design, and Electronic Security Systems respectively.

Q.1.7 Appendix D, Sustainable Design

Q.1.7.1 Army Standard

- Assistant Chief of Staff for Installation Management (ACSIM) endorsement of Sustainable Design and Development

Q.1.7.2 References

- Assistant Chief of Staff for Installation Management, Sustainable Design and Development Website
- U.S Army Corps of Engineers, Engineering Research and Development Center, Construction Engineering Research Laboratory (CERL), Sustainable Design and Development Website
- Air Force Sustainable Facilities Guide
- Whole Building Design Guide

Q.1.8 Appendix M, Historic Preservation Guidelines

Q.1.8.1 Army Standards

- Army Regulation (AR) 200-4, *Cultural Resources Management*
- Department of the Army Pamphlet (DA PAM) 200-4, *Cultural Resources Management*
- The Secretary of the Interior's Standards for the Treatment of Historic Properties

Q.1.8.2 References

- Advisory Council on Historic Preservation
- United States Army Environmental Center

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